City of Saint Paul's
Stormwater Permit Annual Report
2012 Activities & 2013 Workplan

Minnesota Pollution Control Agency

National Pollutant Discharge Elimination System

Permit No. MN 0061263

June 2013

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Background

The NPDES program was created in 1990 by the United States Environmental Protection Agency (USEPA) to safeguard public waters through the regulation of the discharge of pollutants to surface waters including lakes, streams, wetlands and rivers. The Minnesota Pollution Control Agency (MPCA) is the local authority responsible for administering this program. Under this program, specific permits are issued to regulate different types of municipal, construction and industrial activities.

The MPCA issued the first Municipal Separate Storm Sewer System (MS4) NPDES Permit to the City of Saint Paul on December 1, 2000. The City's MS4 Permit was reissued on January 21, 2011. The reissued permit required submittal of a revised Stormwater Management Program (SWMP) on September 28, 2011. The MS4 Permit requires the implementation of approved stormwater management activities, referred to as Best Management Practices (BMPs). These efforts must be documented in the Annual Report. The Permit also requires public input in the development of the priorities and programs, and adoption by Council Resolution of the Annual Report. This Report

presents the activities that will be implemented in 2013, and provides documentation of the activities conducted in 2012.

The Saint Paul SWMP was developed and administered by the City departments that are responsible for permit activities. Included are the Public Works Department, Saint Paul Parks and Recreation Department and the Department of Safety and Inspection. These stakeholders are jointly responsible for the completion of the required permit submittals. The Department of Public Works provides program coordination.

This report is prepared in compliance with the requirements of the NPDES Permit MN 0061263 issued to the City of Saint Paul on December 1, 2000. This permit expired on January 1, 2004. An application for reissuance was submitted to the MPCA in July of 2003. As per federal and state law, the City is operating under the existing permit until the permit is reissued and the City's SWMP is approved.

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I. Storm Sewer System Management

Program Objective

The objective of the NPDES stormwater management program is to minimize the discharge of pollutants through the proper operation and maintenance of the City's storm sewer system. Targeted pollutants include:

- Sediment
- Nutrients
- Floatable garbage

Program Overview

The City's stormwater system includes 450 miles of storm sewers, 28 ponding areas, 4 lift stations, numerous water quality best management practices and over 26,000 catch basins. The Sewer Maintenance section allocates substantial resources to cleaning, inspecting and maintaining the City's stormwater system. All installed stormwater facilities are maintained and operated in accordance with adopted policies and ordinances. All storm sewer pipes are cleaned and inspected in advance of City street reconstruction projects. Where defects are observed, repairs are made at the time of discovery or during the reconstruction project. The City also regularly inspects, cleans and maintains stormwater ponding areas. Storm sewer tunnels are inspected every two years.

In 1995, the City completed a ten-year sewer separation program by constructing 189 miles of storm sewer and 12 miles of sanitary sewer (some combined sewer was converted to storm sewer). In 1997, the City began a 20-year rehabilitation program for its storm and sanitary sewer system. The Sewer Utility complies with MnDOT's Standard Specifications for Construction, and has its own set of Standard Plates.

2012 Activities

1. *Storm Sewer and Storm Tunnels*

The 3.6 mile long St. Anthony Park storm tunnel system was originally constructed in the 1960s and 1970s. The tunnel liner was severely damaged with numerous holes and cracks, which were primarily caused by large rain events that pressurize the tunnel. When the tunnel liner is fractured or holes are present, stormwater is allowed to wash away the friable St. Peter Sandstone, resulting in large voids behind the liner. A three phase tunnel rehabilitation project was started in the fall of 2009 and was completed in 2012. Phase IV of the tunnel rehabilitation project will be complete in the spring of 2013. The final two phases will take an additional two years and $7 million to complete. Tunnel projects typically include the following components: sealing cracks and holes in the tunnel liner, filling large voids behind the tunnel liner, replacing sections of tunnel liner too badly damaged to be repaired and installing stainless steel straps on the inside surface of the tunnel liner to reinforce the cracked liner.

2. *Storm Drain Outfalls*

A storm drain outfall is the point where the storm sewer system discharges to a receiving water. Outfalls are inspected on a 5-year schedule. Outfall inspections include an evaluation of the general condition of structure, determination of significant erosion and identification of any non-stormwater discharges. When indications of non-stormwater discharges are observed, they are reported to the appropriate City staff for follow-up investigation and resolution and reported to the Minnesota Duty Officer, as required. Any identified structural repairs or maintenance work is prioritized and scheduled within the constraints of available personnel, funding and coordination with other essential operations. The Appendix contains the outfall inspection report for 2012.

3. *Catch Basins*

A catch basin is an inlet to the storm drain system. A field survey of the City's catch basins using GPS equipment located all city owned catch basins. The total number of catch basins inventoried was 26,200. As part of the City's Residential Street Vitality Program (RSVP), existing catch basins within a street reconstruction project area are replaced with new catch basins. Cleaning catch basins, while ensuring proper

runoff conveyance from City streets, also removes accumulated sediments, trash and debris. Catch basins that are reported as plugged or damaged are given a priority for repair and cleaning. Sewer Maintenance has set a goal of cleaning 2,000 catch basins per year. All catch basins in the Central Business District were cleaned in 2012. Augmenting this effort is the street sweeping program, carried out by the Street Maintenance Division. The street sweeping program targets the pick-up of street sediment, debris and leaves prior to their reaching catch basins.

4. *Stormwater Ponds*

Saint Paul's stormwater ponding areas are constructed to collect and detain flows from storm events and in some cases to also improve water quality. These ponds are designed to reduce peak flow rates in downstream storm sewers. A map showing the stormwater ponding areas in the City of Saint Paul is found in the Appendix. The Appendix also contains the tributary area and design capacity for each of the City's ponding areas and a list of stormwater ponding areas by watershed. The City's stormwater ponding areas are inspected by Sewer Maintenance staff after major rainfall events. Minor maintenance is completed as needed based on the inspection results.

The City implemented a program to evaluate its ponding areas for major sediment removal in 2002. This program involves an initial inspection, prioritization, survey, timber removal, sediment removal and inlet/outlet reconstruction. Major sediment removal took place in a majority of the city's ponds in the winters of 2002/2003 and 2003/2004. The estimated cycle for sediment removal from ponding areas is 20 years.

Saint Paul Parks and Recreation and Ramsey County tested sediment from three stormwater ponds on the Phalen golf course. Sediment removal was completed at one pond in the winter of 2012. The remaining two ponds will be dredged in 2013.

5. *Pump Stations*

The City has four stormwater flood control pump stations that are located along the Mississippi River. These pump stations provide interior drainage during flood events on the Mississippi River. The stormwater flood control pump stations are inspected and operated twice per year. All of the stations are connected to the City's Supervisory Control and Data Acquisition system.

6. *Water Quality Best Management Practices*

The city constructs water quality and volume control BMPs as required by the MPCA Construction Permit and Watershed District Rules. Since 2006, the City has constructed BMPs, including infiltration trenches and rain gardens, as part of the RSVP. Sewer Maintenance is cleaning and inspecting infiltration trenches the year after street reconstruction and then on an as needed basis. The trenches constructed as part of the Arlington/Pascal project upstream of Como are inspected and cleaned twice per year.

7. *Water Quality Initiatives Program*

The City's Water Quality Initiatives Program includes the following components:

- **Volume Reduction Inventory -** Development of a long term strategy to construct stormwater improvements on opportunity sites.
- **Stormwater Modeling –** Develop XP-SWMM and P8 models of the City's stormwater system.
- **Feasibility Studies -** Identification of feasible options to provide water quality treatment in specific locations within the City.
- **Project Construction –** Projects identified as feasible are designed and constructed.

The following is a list of projects and studies that were completed or are planned under the City's Water Quality Initiative Program:

- **Stormwater Modeling –** In 2012, began modeling the Phalen Creek storm sewer interceptor. The East and West Kittsondale storm sewer system modeling project will start in 2013.
- **Dale Street Facility Sediment Control Structure –** Public Works hired WSB and Associates to complete a Facility Improvements Feasibility Report for four Public Works facilities and one Parks and Recreation facility. In 2012, a large pre-fabricated sediment control and collection structure was constructed at the Public Works' Dale Street Facility at a cost of $140,000.
- **Hillcrest Knoll Park Water Quality Improvements Project -** Hillcrest Knoll Park was constructed to serve as a flood reduction project for the neighborhood. The park was identified as an ideal location to reduce

stormwater runoff volumes and improve the water quality of receiving waters.

The final stormwater design included the following components:

1. Bypass system from the Flandrau Street storm sewer that directs flows to the proposed Hillcrest Knoll Park system.
2. Gate structure that regulates storm flows to the to infiltration pipe gallery.
3. Pre-fabricated sediment control and collection structures.
4. Infiltration facility including perforated pipe gallery and overflow to existing storm sewer.
5. Erosion control and restoration activities associated with proposed improvements, including reconstruction of the existing rain garden.

The Hillcrest Knoll Water Quality Improvement Project was substantially constructed in 2012 at an approximate cost of $1.1 million. The Ramsey-Washington Metro Watershed District stormwater volume credit is approximately 85,000 cu-ft.

- **Trillium Park Stormwater Ponds** - As part of the Trillium Park Project the Sewer Utility intends to fund the construction of three stormwater quality ponds. The ponds are designed with dead pool storage, a skimmer outlet structure to prohibit floatables from moving downstream, and an iron-enhanced (5% iron by weight) sand filter bench. Based on published research data, an iron-enhanced bench is capable of removing 80% of the total phosphorus. Total water quality credit volume granted by the Capitol Region Watershed District is approximately 108,900 cubic feet. A 70% filter volume credit has been applied to this credit volume. Sewer diversion piping and pre-treatment sediment control structures will be constructed upstream of the wet ponds. The facilities described above will be owned and maintained by the Public Works Department. Construction cost for these improvements is estimated at $900,000. The Trillium Park Project is planned to begin in 2013.

- **Hampden Park Water Quality Improvement Project -** Plans are being developed to construct an underground stormwater infiltration system consisting of a perforated pipe gallery within Hampden Park. Pre-treatment sediment control structures are also planned to be constructed. The potential credit volume for stormwater runoff is estimated at 30,000 cubic feet.

Construction cost is estimated at $450,000. The project is anticipated to begin in 2013.

- **College Park Water Quality Improvements Project** - The College Park site has a total drainage area of 82 acres. Currently, untreated stormwater from this drainage area is conveyed through the existing storm sewer system to the Mississippi River. To improve stormwater quality and reduce the volume of stormwater runoff from this drainage area, a below grade infiltration system will be constructed in a portion of College Park. The total storage volume of the BMP is 99,457 cu-ft. The BMP is anticipated to infiltrate 199,347 cu-ft of stormwater runoff during a 2"-24hr rainfall event. The estimated cost for this project is $1 million. Construction for College Park has been delayed to further document ground water levels in the area.

- **Parks and Recreation Wash Stations:** Contracted with ESD Waste2Water, Incorporated to complete site visits and provide five proposals for installation of permanent or portable equipment wash stations. Parks will seek funding for future installation.

- **Swede Hollow Park Stormwater Study** - A stormwater study was initiated at Swede Hollow Park to evaluate the potential to improve water quality in the park, including opportunities to daylight stormwater into stream channels or wetlands. This study followed on the heels of pond dredging activities in the park initiated in 2011, and completed in 2012.

- **Stormwater BMP Installation and Maintenance:** Parks and Recreation received $69,000 in in-kind labor from Conservation Corps Minnesota for installation and maintenance of stormwater best management practices in Saint Paul. Funding was made possible through the Legacy amendment.

- **Highland Ravine Stabilization Study:** Capitol Region Watershed District completed a Highland Park ravine stabilization study in 2012, with implementation to occur in 2013.

- **Crosby Farm Regional Park:** Great River Greening and Wenck Associates, Inc. completed a riparian area study at Crosby Farm Regional Park to address sediment and erosion control issues north of Upper Lake and Lake Crosby. Implementation of bioengineering recommendations and invasive species removal initiated in 2012, to be completed in 2013. The west parking lot at Crosby Farm Regional Park was reconstructed, including a large raingarden and an infiltration area.

- **Lake Como Lakeshore Plantings:** Parks and Recreation extended native lakeshore plantings at Lake Como, and enhanced existing plantings.

- **Phalen Golf Course BMPs:** Parks and Recreation received $57,000 in grant funding to implement best management practices to improve water quality at the Phalen Golf Course and at Round Lake.

Performance Measures

- Continued a major tunnel rehabilitation project.
- Cleaned 1661 catch basins.
- Inspected, cleaned and repaired storm sewer manholes.
- Inspected and maintained stormwater ponding areas.
- Inspected and maintained pump stations.
- Inspected storm sewers and tunnels.
- Constructed water quality BMPs.
- Completed feasibility studies.
- Completed stormwater modeling projects.

2013 Work Plan

Management and maintenance of the City's storm sewer system will continue as in prior years including implementation of the City's Water Quality Initiative Program.

II. Disposal of Removed Substances

Program Objective

The objective of this NPDES stormwater management program is to minimize the discharge of pollutants through the proper operation and maintenance of the City's storm drain system. A key component is the collection and disposal of targeted pollutants in a manner that will prevent pollution and that will comply with applicable regulations. Targeted pollutants include:

- Sediment
- Nutrients
- Floatable Garbage

Program Overview

Material is collected from catch basin sumps, the storm sewer system, ponding areas and water quality BMPs. Removed substances are screened for visual or olfactory indications of contamination. If contamination of the material is suspected, representative samples are selected for an environmental analysis. Contaminated substances are disposed of in a landfill or another site that is approved by the Minnesota Pollution Control Agency. Uncontaminated sediments are disposed in the same manner as street sweepings, as reported in Section IV: Street Management Program. During cleaning operations, sediment control measures are applied as needed to prevent removed material from re-entering the storm drain system.

Performance Measures

- Quantity of materials removed from catch basins: 715 tons

2013 Work Plan

Disposal of removed substances will continue as in previous years.

III. New Development and Construction

Program Objective

The objective of this NPDES stormwater management program is to minimize the discharge of pollutants through the regulation of construction projects and new developments. Regulation of stormwater runoff includes erosion and sediment control requirements. Targeted pollutants include:

- Phosphorus
- Sediments

Program Overview

Saint Paul Code of Ordinances, Part II – Legislative Code, Title VI - Building and Housing, Chapter 52 Stormwater Runoff contains erosion and sediment control requirements, and stormwater management requirements for new developments and other land-disturbing construction activities. Construction activities and new development projects are reviewed through the City's Site Plan Review process. This review provides comments that are integrated into a final plan submittal that is subsequently routed to the City's Departments for approval. The Department of Safety and Inspections reviews projects for compliance with the erosion & sediment control requirements and water quality requirements. The Sewer Utility reviews projects for rate control, flood protection and capacity issues.

2012 Activities

Site Plan Review

During 2012, the City Departments reviewed over 106 site plans of which, 78 received final approval with the appropriate permits issued. Continued attention to erosion and sediment control plan submittals, along with increased awareness in the industry, provided for better compliance during site inspections.

Erosion and Sediment Control

Requirements

The ordinance addresses development sites, utility excavations, demolition projects and all other land disturbing activities of 1 acre or more. For disturbances less than 1 acre, erosion and sedimentation control practices must be installed and inspected before land disturbing activities begin. Sites disturbing more than 10,000 square feet need to submit an erosion and sediment control plan as part of the City's Site Plan Review process. City Zoning Code Chapter 33 requires a grading permit for the placement, movement and removal of fifty cubic yards of fill and to incorporate stabilization methods on soil stockpiles greater than 10 cubic yards, if left for more than 10 days.

Inspection and Enforcement

Ongoing site inspections are performed by Public Works ROW and DSI inspectors. In 2012, DSI inspectors conducted 146 erosion control inspections. The City of Saint Paul utilizes standard forms for both public and private construction sites. The standard form utilized for documenting field inspections for street reconstruction projects is intended to be handwritten in the field and included in the project file. Staff started using the forms in 2011. The standard form utilized for documenting field inspections on private projects is found in the Appendix. The forms supplement a database which tracks multiple levels of information including inspections for erosion control.

Inspectors may issue a warning notice citation or a "Stop Work Order". Failure of the permittee to comply with the ordinance will constitute a violation and will be considered a nuisance pursuant to the laws of the State of Minnesota. If there is a demonstrated failure to comply, the City reserves the right to terminate a permit at any time. The City then has the option of proceeding with the necessary restoration of the site. This restoration would be done at the expense of the owner/permittee. Increased awareness of the ordinance, improving plan submittals and a continued compliance based inspection program resulted in a continued rise in compliance. Inspections were coordinated with the Capitol Region and Ramsey-Washington Metro Watershed Districts. During 2012, Public Works Construction inspectors continued to work with

internal forces on erosion and sediment control compliance. The ESC measures and associated costs for RSVP projects are found in the Appendix.

Ongoing Stormwater Management

Redevelopment of existing sites provides an opportunity to lessen the impacts of urbanization on the Mississippi River and other Saint Paul water resources. During 2012, Stormwater Best Management Practices (BMPs) were installed on sites reviewed through the Site Plan Review process. BMP types that were constructed include:

- Rain gardens
- Pervious pavement
- Infiltration areas
- Stormwater ponds
- Underground infiltration/filtration and detention facilities

Plan Review

Stormwater management plans are required for all construction projects, which disturb one acre or more of land. These plans are reviewed through the Site Plan review process and approved by the Department of Safety and Inspections and the Saint Paul Public Works Sewer Utility. Sites disturbing less than one acre are also required to provide runoff rate control, if the project disturbs greater the 10,000 square feet. In addition, sites under one acre are encouraged to incorporate green infrastructure stormwater BMPs into their design as a means of satisfying other city codes, such as parking requirements. The City updated its Off-Street Parking Code to include stormwater landscaping requirements in June of 2010. In July of 2010, the City began implementation of the green building policy requirements for city building projects and private projects receiving more than $200,000 in City funding to facilitate design and construction of stormwater quality practices. A description of the site plan review process is accessible on the City's website (www.stpaul.gov/index.aspx?NID=1073). This provides subsequent links describing requirements, review process, and submittals

Goals

- Reductions of sediment and nutrient discharges to receiving waters
- Controlled rate of runoff
- Provision of on-site, off-site or regional stormwater facilities
- Maximizing infiltration by minimizing the amount of impervious surface

- Employing natural drainage and vegetation

Standard Operating Procedures and Checklists

The City has developed the following standard operating procedures (SOPs) and checklists for Erosion and Sediment Control (ESC) on public and private construction sites:

- The City of Saint Paul utilizes a standard form for both public and private construction sites.
- Public Works Right-of-Way Division uses a form when ROW inspectors inspect Utility Installation work. This form was distributed at the annual Utility review meeting. (See Appendix.)

Staff Training

- ESC information was distributed at the City's Annual Utility Project Review meeting in February 2012.
- ESC training for 29 staff from Public Works, DSI and St. Paul Regional Water Services was held in February of 2012. Agenda found in Appendix.
- City of Saint Paul inspectors are trained and certified through the University of Minnesota's Erosion and Stormwater Management Certification Program. This includes Department of Public Works Street Construction inspectors as well as Department of Safety and Inspections Building inspectors. The certification includes a recertification component within a 3-year period, which ensures training stays current with techniques and regulations.

Performance Measures

- Tracking all erosion control plans and inspections in City's AMANDA system.
- Handouts and worksheets to be distributed to all relevant applicants.

2013 Work Plan

Site Plan Review

DSI and Public Works staff will continue their detailed review of site plans and a tracking process to identify stormwater management opportunities and to review all site plans from a sustainable water quality perspective.

Erosion Control

New public and private developments and other projects that disturb one acre or more will be inspected for erosion and sediment control. This effort will lead to a continued awareness of the problems associated with construction site sediment. This will also result in a continuing increase in the overall rate of compliance citywide. The City will continue to study options to increase compliance, and to help limit the amount of erosion and sediment loss associated with construction projects.

Data Collection and Analysis

City staff will continue to develop performance measures and to improve data collection, tracking and analysis. The City will also pursue means of measuring and understanding water quality impacts.

Standard Operating Procedures and Checklists

- Continue to improve SOPs and checklists and distribute to appropriate parties.

Staff Training

- City staff has and will continue to be trained and certified as required by the MPCA's General Construction Permit.
- Review Erosion Control requirements at the annual Utility Coordination Meeting.

IV. Street Management Program

Program Objective

The objective of this stormwater management program is to minimize the discharge of pollutants through the proper operation and maintenance of public streets, alleys and municipal equipment yards. Targeted pollutants include:

- Sediment
- Nutrients
- BOD
- Chloride
- Floatable Garbage

Program Overview

Street Sweeping

The City of Saint Paul conducts a street and alley cleaning program to promote the health and welfare of its citizens and to reduce the amount of pollutants to receiving waters from stormwater discharges. Sweeping is a major operation for the Street Maintenance Division and is done every month of the year, day and night. Elgin Pelican mechanical sweepers handle the vast majority of the sweeping. An Elgin Crosswind regenerative air sweeper is utilized downtown every weekday.

Residential street spring sweeping was completed on May 23, 2012. The primary material swept in the spring is debris from winter months. Fall sweeping is done during the last week of October and the first half of November. The fall sweep is timed so that a majority of the leaves are down and enough time is allowed to sweep all Saint Paul streets before the first snow. Currently, the wide variety of trees with varying leaf drop times makes it impossible to wait for all of the leaves to drop. To compensate for this, touch up sweeping continues most years through November and early December. In the interest of continued improvement to our sweeping program, workers attend training and best management practices are implemented.

Snow and Ice Control

Minnesota weather conditions may require ice control from late September through early May. Frost forming on bridge decks is usually the first and last ice control event of the winter season. From early November through mid-April, the need for pavement treatment is determined by temperature and precipitation. Frequency of snow events through the winter season influences amounts of material used. The City's foremost objective is to maintain safe roads for all users. The consequences of icy roads are longer travel times, adverse economic impact, accidents and injuries.

Salt is the primary material used to melt snow and ice. Salt and treated salt is effective to 15°F and 0°F respectively, but factors such as darkness, continuing snow, type and quantity of precipitation, all reduce melting performance. Sand is sometimes used in conjunction with salt to enhance traction, usually when temperatures are below 0°F and snowfall amount is likely to be greater than 3 inches. Specific application rates are decided upon for each snow event and adjusted to the minimum amount necessary to achieve the desired results.

Saint Paul uses treated salt for temperatures below 15 °F and regular salt for temperatures between 15°F and 32 °F. Salt brine is used to pretreat salt from the salt spreaders, making the salt more effective. The benefits of pretreated salt are better melting performance, less bounce, residual value and reduction in amount of salt used. Fifteen sander trucks are presently fitted with salt pre-wetting equipment. Public Works developed and adopted a formal Salt Management Plan in the fall of 2011

Storage of De-icing Materials

Salt and mixed piles of sand and salt are covered year round to eliminate runoff. Storage facilities are located at the following locations:

873 N. Dale Street
310 South Victoria Street

2012 Activities

Street Sweeping

Streets and alleys are divided into classes, each of which receives a different level of service as defined below:

Class I-A & B Downtown or Loop streets

Downtown or loop streets are within the following boundaries: Kellogg on the south, 12th on the north, Broadway on the east and Main on the west. These streets are swept approximately two times per week during the spring, summer, fall and winter as weather allows. All routine maintenance, including patching and repairing of street surfaces, is performed on an as-needed basis.

Class II - Outlying Commercial and Arterial Streets

These streets, which have business or commercial properties fronting on them, are the City's major arteries. They have heavy volumes of both vehicular and pedestrian traffic. Typical examples are University, Snelling, West 7th, East 7th, Rice, Payne, Arcade, Summit and Grand. Class II streets are swept or cleaned eight to ten times annually on the following schedule: every two weeks in April, May, October and November for spring and fall cleanup and every three weeks in June through September for litter, tree debris and sediment. Occasional winter sweeping is also done. All routine maintenance, including patching and repairing of street surfaces, is done on a scheduled or as-needed basis.

Class III - Residential Streets

In the spring, all residential streets, including oiled, paved and intermediate streets, receive a thorough sweeping. Patching and repairing is done on a scheduled or as-needed basis. All existing paved and oiled streets are on the 10-year cycle chip seal list. Approximately 72 miles of paved streets were chip sealed in 2012. Oil and sand sealing of oiled streets is no longer done. The City recycles the reclaimed chip seal rock. This material is no longer hauled to the landfill. In the fall, streets are swept for leaf pickup. All material swept up during the fall cleanup is hauled to a commercial composting facility.

Class IV - Oiled and Paved Alleys

All oiled and paved alleys are swept during the late spring. All routine maintenance, including patching and repairing of the alley surfaces, is performed on a scheduled or as-needed basis. All existing paved and oiled alleys are now on an 8-year cycle chip seal list. Oil and sand sealing of oiled alleys is no longer done.

Class V and VI - Unimproved Streets and Alleys

Unimproved streets and alleys are right-of-ways that have not been developed. There are approximately 50 miles of unimproved streets and approximately 288 miles of unimproved assessed alleys in the City. Because they are City right-of-ways, the City has the responsibility to perform minimal repairs and maintenance work on them to make them passable and to reduce hazards. The maintenance and repair of these streets and alleys consists of patching, minor blading, and placing of crushed rock or other stabilized material.

Disposal

The materials collected from street sweeping are delivered to the City's Pleasant and View yard. The City's hauling contractor hauls the material away to have it screened and disposed of properly. The contractor composts the organic materials, which are mostly collected in the fall sweep.

Street Maintenance has a Hazardous Waste Disposal Policy in place. Any hazardous materials collected from City streets are disposed of in environmentally acceptable means. In 2001, the sweepings collected from City streets and alleys were tested and found to be within the Environmental Protection Agency's guidelines for recycling purposes, after screening out waste and debris. Approximately 7 to 10% of swept up material is disposed of in a landfill. Street Maintenance also services over 360 trash receptacles and disposes of refuse from neighborhood cleanups each year.

2012 Street Sweeping Quantities (Cubic Yards)

Class	Spring/Summer	Fall
I & II - Downtown & Arterials	7,966	4,634
III – Residential & Alleys	8,358	20,692
Totals	16,324	25,326

Snow and Ice Control

The 2012 winter season was fairly mild in January and February and closer to normal in November and December. Two snow emergencies with depths of 3 and 14 inches were declared early in 2012. Typically 3 or 4 snow emergencies are declared during this period. It is anticipated that ice control materials used for 2013 will be similar to 2012 quantities.

2012 Ice Control Material Quantities

	Jan to March	Nov to Dec	Total
Salt (tons)	5,717	2,017	7,824
Sand (tons)	0	100	100
Treated Salt (tons)	756	1806	2,562
Brine (gallons)	87,941	108,140	196,081
Brine with Mg (gallons)	3,878	0	3,878

Employee Training

Saint Paul Public Works is an advocate of networking and regularly attends events such as the American Public Works Association North American Snow Conference and the Fresh Water Society Road Salt Symposium. All operators attended a Snow and Ice Control training session in October of 2012. Attendees received certification from the MPCA. The main purpose of this session was to train employees to get the most out of every application, maintaining the safest roads possible in the most economical way, while protecting the environment. The session addressed the following: abrasives, salt, pre-wetting. anti-icing, equipment calibration and material storage. Staff annually attends the Road Salt Symposium. The Minnesota Snow and Ice Control Handbook and Saint Paul Public Works Salt Management Plan are available to all employees and are used as a guide in our best practices.

Parks and Recreation Employees attended the following trainings:

- Parks Natural Resources Manager and Como Campus Maintenance Supervisor attended the 11th Annual Road Salt Symposium.

- 42 first line Park employees and supervisory staff attended Turf Maintenance/Storm Water training provided by the CRWD and Fortin.

- Approximately a dozen Park employees attended training on Snow and Ice Control BMPs provided by RWMWD.

Performance Measures

- Amount of materials recovered
- Amount of salt and sand applied
- Employee trainings

2013 Work Plan

Ongoing activities to fulfill permit requirements will continue. Additional education opportunities will be explored for management and maintenance workers. Management will keep abreast of new technologies for snow and ice control and street sweeping, as they become available. Promising technologies will be tested on a pilot basis before implementation.

V. Pesticide and Fertilizer Management

Program Objective

The objective of this stormwater management program is to minimize the discharge of pollutants by controlling the application of pesticides and fertilizers. Targeted pollutants include:

- Pesticides
- Nutrients

Program Overview

In November of 2001, the Saint Paul City Council passed an ordinance regulating the use of lawn fertilizer containing phosphorus in the City of Saint Paul. The ordinance bans the use of fertilizer containing phosphorus in the City with the exception of establishing a new lawn or if a soil test shows that phosphorus is needed. The ordinance also requires retailers to clearly label fertilizer containing phosphorus and post a notice advising that the use of such fertilizer is restricted within the City. In addition, the City amended an ordinance regulating commercial applicators in Saint Paul. The amendment requires commercial fertilizer applicators to be licensed by the City in addition to the pesticide applicators. The state passed legislation that sets a 0% phosphorus ban on fertilizer for the metro area effective in 2004.

The City has strict requirements that are followed for applications on all City facilities. All city programs for pesticide use shall be reviewed and approved by the city council prior to any application upon city property. Each use of pesticide or fertilizer is documented and reported to the City Clerk and to the District Council in which the application occurred. City policy was developed upon the recommendations of a report done by the City Council Investigation & Research Center in May of 1990. In addition, all City staff that applies pesticides and fertilizers must be licensed in accordance the City Ordinance, which requires commercial applicators to be licensed by the City.

2012 Activities

Pesticide and Fertilizer Use on City Facilities

The City continued to apply, document and report pesticide and fertilizer use in accordance with these requirements. The Department of Parks and Recreation follows an Integrated Pest Management program with the goals of decreasing pesticide use and replacing synthetic herbicides with organic alternatives when feasible.

Public Education

The City continued to participate in the Watershed Partners, Minnesota Water Media Campaign. Information on public education and outreach is found in that section of the report.

Performance Measures

- Number of staff with pesticide application licenses.
- Amount of materials applied.

2013 Work Plan

- Continue to certify employees as pesticide applicators
- Continue to track applications of pesticides on city property.
- Continue to implement Integrated Pest Management on park property.
- Continue to coordinate with existing education efforts, such as WaterShed Partners, to develop and distribute educational pieces.

VI. Prohibited Discharges to the Storm Sewer System

Program Objective

The objective of this stormwater management program is to minimize the discharge of pollutants by implementing a program to detect and mitigate prohibited discharges, and to encourage that an NPDES General Industrial Stormwater Permit or other such permit be obtained for non-stormwater discharges, if applicable. Targeted pollutants include:

- All pollutants

Program Overview

Spill Response

The Sewer Maintenance section of the Sewer Utility and the Saint Paul Fire Department personnel typically serve as the first responders to a spill event. The immediate goals of this response are safety, containment of the spill, recovery of hazardous materials and collection of data for use in assessment of site impacts. Recovery efforts can take several forms, but typically fall into two broad categories: recovery for disposal and the use of absorbents or other media to collect hazardous waste for disposal.

The life cycle of an event requires City personnel to work as a team, utilizing all available resources to protect residents, the environment and property. Each event is followed by a post-action debriefing to determine the cause of the event, to identify measures to improve the City's response, and to determine the means to limit future occurrences. Outside agencies and private emergency response contractors are incorporated as needed. Spills that fall within the minimum reporting requirements are reported to the Minnesota Pollution Control Agency (MPCA) Public Safety Duty Officer. For these spills, an Oil and Hazardous Materials Spill Data form must be completed within 24 hours, or by the next business day. The completed forms are used to document the type of spill, as well as the response to the spill.

Prohibited Discharges

Pollution prevention and control is achieved through educational efforts, inspections and coordinated community outreach. These activities may include enforcement, pursuant to applicable City codes, and coordination with other regulatory agencies at the county, state and federal levels. Enforcement yields identification of the responsible party, documentation of clean-up activities, and efforts to reduce the flow of pollutants from illegal dumping and disposal. Complaints are received from the public, City staff and other government agencies. Department of Safety and Inspections and Public Works staff respond to reports of unauthorized discharges and illicit connections. The City has developed an ordinance (see Appendix for ordinance and fact sheet) defining allowable discharges to the storm sewer system. The ordinance was finalized in 2012 and is targeted for adoption in the first part of 2013.

Non-Stormwater Discharges

The following non-stormwater discharges are not a significant source of pollutants and no additional control measures are needed for these discharges:

- NPDES permitted non-stormwater discharges
- Water line flushing and other discharges from potable water distribution system
- Landscape irrigation and lawn watering
- Irrigation water
- Diverted stream flows
- Rising ground water
- Foundation and footing drains
- Water from basement sump pumps
- Air conditioning condensation
- Springs
- Individual residential and fund raising car washings
- Flows from riparian habitats and wetlands
- Swimming pool discharges
- Flows from fire fighting

Detection and Removal Screening Program

The field screening program to detect and investigate contaminated flows in the storm drain system is part of the City's daily operations. Sewer Maintenance crews routinely inspect and clean storm drain structures throughout the City. In addition, inspections of flows that generate unusual odors, stains, and deposits are included in the annual outfall inspection program. Any suspect flows are then reported to appropriate City staff for further investigation. These combined efforts result in an annual screening of more than 20% of City drainage areas. The City works with the Capitol Region Watershed District to conduct a stormwater monitoring program in Saint Paul as well as conducting its own BMP monitoring program. The best avenue for a continued effective screening program in the City of Saint Paul, without duplication of services, is to continue to use current practices, and to explore the development of certain aspects of the program to improve enforcement results.

2012 Activities

The City investigates prohibited discharges as part of its regular outfall and pond inspection program. The City also investigate complaints and issues identified in the monitoring program. The development of a targeted approach will be included in the City's updated SWMP for the reissued MS4 Permit. The Department of Safety and Inspections carries out enforcement on property code violations. Under Chapter 45 of City Code, the City is authorized to collect via assessment its cost of abating property-related health and safety problems when an owner has failed to perform the work following notice by the City. The City may assess property owners to recover unpaid city charges.

In 2012, City staff followed up on complaints regarding routine discharges to the storm sewer system. On November 5, 2012, CRWD reported foam and sheen at the outfall. Sewer Maintenance walked the tunnel and did not find any evidence of an illicit discharge. At the end of November of 2012, a tunnel rehabilitation project was started in this tunnel. The inspectors and contractor continued to look for indications of illicit discharges. The consultant on this project did notice similar foam in a tunnel in Minneapolis. It appeared that the foam occurred about 20 feet downstream from an area of turbulent flow.

Standard Operating Procedures and Checklists

- The Parks Department uses a Spill Reporting form and instructions (See Appendix). Form is completed in the event of a spill if petroleum or hydraulic spills greater than five gallons, and other materials spill of any size. The Minnesota Duty Officer is notified, as required, in the event of a reported spill.
- The Parks Department and the Department of Public Works have Clean Water Policies which are distributed, reviewed, and signed by all field staff. (See Appendix)

Staff Training

- A fact sheet was developed and distributed with the adoption of the new ordinance (See Appendix). Several staff meetings were held throughout the development of the ordinance.

Performance Measures

- Resolution of reported or discovered prohibited discharges in previous year.
- Development and implementation of SOPs.
- Staff training

2013 Work Plan

Continue existing programs as outlined in the program overview, and continue to develop and improve documentation of program activities. GIS mapping will be implemented as a tool to support various activities. Information that is gained through the inspection program will be used to compile data on non-stormwater discharges, storage of hazardous materials, and activities or operations that may be potential water pollution point sources. The City will adopt an ordinance defining allowable discharges to the storm sewer system. The City will continue to investigate prohibited discharges as part of its regular outfall and pond inspection program. The development of a targeted approach will be included in the City's development of an updated Stormwater Management Plan for the reissued permit.

VII. Public Education Program

Program Objective

The objective of this stormwater management program is to educate the public regarding stormwater pollution. Targeted pollutants include:

- All pollutants

Program Overview

The City of Saint Paul implements its Public Education Program to promote, publicize and facilitate the proper management of stormwater discharges to the storm sewer system. The program's focus is to educate residents, business owners, employees and visitors about stormwater. The program's goals include showing how everyone's actions affect the quality of our lakes, wetlands, streams and the Mississippi River, and how to control pollutants at the sources to reduce the discharge of pollutants to our receiving waters. The desired result is to change behavior in ways that will improve water quality. Many of the components of the program can be found on the City of Saint Paul Stormwater web site: http://www.ci.stpaul.mn.us/index.aspx?NID=2686

2012 Activities

Storm Drain Stenciling Education Program

The City of Saint Paul has been conducting a successful storm drain stenciling education program since 1993. The Friends of the Mississippi River (FMR) coordinates this program for the City. FMR is the leading citizens' organization working to protect the Mississippi River and its watershed in the Twin Cities area. In 2012, FMR coordinated the stenciling of 2,776 storm drains and distribution of 9,198 door hangers in partnership with 1,281 volunteers. The 2012 Stenciling Program Report and a copy of the door hanger are found in the Appendix.

The storm-drain stenciling project is designed to meet the following three objectives:

- To stencil storm drains with the message “Please Don’t Pollute Drains to Mississippi River,” and distribute multi-lingual educational door-hangers to residents and businesses in the stenciled neighborhoods in the City of Saint Paul.
- To involve community residents in hands-on learning experiences about urban runoff pollution and ways to prevent it.
- To facilitate school service learning initiatives that include storm drain stenciling as a key component.

The 2012 program objectives were implemented through the following activities:

- Coordinated the stenciling of storm drains and distribution of door hangers in partnership with volunteers from school groups, community groups, and residents of the City of Saint Paul.
- Provided a 30 to 45 minute educational orientation to each volunteer group.
- Provided educational presentations on urban runoff pollution to volunteers, classrooms and other community members.
- Coordinated 2 litter clean-ups with school and community groups.
- Presented 2 community workshops on urban runoff pollution and ways to prevent it around the yard and home.
- Held a community presentation on the State of the River Report.
- Lead a tour on small site rain gardens.
- Coordinated the purchase, maintenance and storage of all stenciling and workshop supplies.

Metro WaterShed Partners

Saint Paul has been an active Metro WaterShed Partners since 1997. Metro WaterShed Partners is an innovative, dynamic coalition of over 40 public, private and non-profit organizations in the Saint Paul/St. Paul metropolitan area that, through collaborative educational outreach, teaches residents how to care for area waters. This partnership has leveraged grant dollars and staff time to develop educational literature and a nationally recognized interactive display. The WaterShed exhibit was at schools and events in and around Saint Paul in 2012. The WaterShed is also at the Minnesota State Fair in the Department of Natural Resources Building each year. The Partners staff it during this time.

Metro Clean Water Campaign

To assist cities with educational efforts, Metro WaterShed Partners is conducting the Metro Clean Water Campaign. This type of collaboration allows for the development of a consistent message, which is distributed cost effectively. A City of Saint Paul staff person is a member of this committee. The campaign was funded in 2012 with money raised from local units of government. Saint Paul contributed to this campaign in 2012 and plans to contribute in 2013. The 2012 report for the Metro Clean Water Campaign is found in the appendix.

Annual Spring Parks Clean-Up and Neighborhood Litter Campaign

St. Paul Parks and Recreation hosts an Annual Spring Parks Clean-Up every year during the month of April. The City provides clean-up supplies, trash removal, recycling services and a “thank you” celebration. During this event volunteers remove litter from Saint Paul's Parks and Recreation Centers. Without the help of volunteers during the cleanup, trash accumulates in these natural areas harming wildlife, polluting lakes and rivers and detracting from the beauty of our community. This event is a fun and effective way to improve the environment in our community.

Waterfest

The City of Saint Paul is a sponsor of Waterfest, which is a family festival put on each May at Lake Phalen by the Ramsey-Washington Metro Watershed District. The Watershed District estimates that 1000 people attend this free family festival. The Parks Department assists in coordinating this event. The Public Works Department provides a street sweeper to be on display for this event.

Performance Measures

- Tracking of number of participants, flyers, storm drains stenciled etc.

2013 Work Plan

Identifying additional opportunities and methods for education and outreach will continue. The City will maintain and strengthen partnerships with multiple agencies, including the LMWMO, MWMO, CRWD, RWMWD, Friends of the Mississippi River, Ramsey County, WaterShed Partners, the MPCA, the DNR, neighborhood groups, private citizens and business owners.

- Continue our broad-based approach to public education and outreach for Saint Paul residents, workers and visitors, to increase environmental knowledge, watershed awareness and source control of pollutants that will result in less pollution of our surface water resources.
- Continue the storm drain stenciling and education program.
- Continue web site development.
- Carry out Earth Day Watershed Clean-Up and stormwater education activities

VIII. Coordination with Other Governmental Entities

Program Objective

The objective of this stormwater management program is to maximize stormwater management efforts through coordination and partnerships with other governmental entities. Targeted pollutants include:

- All pollutants

Program Overview

The City of Saint Paul coordinates with many entities in all aspects of managing stormwater. Each project, event or activity listed involves the contribution of numerous entities. By its nature, water does not follow political boundaries therefore cooperation is necessary to effectively manage stormwater. The limited resources that are available must be used efficiently with minimal duplication of efforts. The main area of coordination on these issues is with Saint Paul's watershed management organizations.

Activities

Water Resource Work Group

In December of 2008, the Saint Paul City Council passed a resolution committing the City to the stewardship and protection of valuable water resources and establishing a Water Resource Work Group. This group, made up of staff members from multiple City Departments, meets monthly to discuss and work on water resources issues in the City including planning and implementation of the Stormwater Management Program for the City's Stormwater Permit. This group regularly meets with the watershed organizations and other entities to coordinate projects and programs.

Saint Paul Local Surface Water Management Plan

The City of Saint Paul's Local Surface Water Management Plan was developed to meet the requirements of Minnesota Statue 103B.235, Minnesota rules 8410.00160 and 8410.0170 and with the Watershed Management Plan's of Saint Paul's watershed management organizations. The Metropolitan Council also reviews the local water plans in the Metro Area. The plan was approved by the Capitol Region WD, Ramsey-Washington Metro WD, Lower Mississippi River WMO and Mississippi WMO. The City Council adopted the plan in December of 2006. This plan will be updated in response to the Watershed Management Plan updates of the City's watershed organizations.

Water Chapter of the City's Comprehensive Plan

In February of 2010, the City completed its Comprehensive Plan as required by the Metropolitan Council. This update includes a water resources chapter, which addresses municipal water supply, surface water management and the sanitary sewer system. The water resources chapter of the Comprehensive Plan can be found on the City's website at http://stpaul.gov/DocumentView.aspx?DID=11886.

Minnesota Cities Stormwater Coalition

Saint Paul is a member of the Minnesota Cities Stormwater Coalition (MCSC), which was formed in 2006. A city staff person serves on the steering committee for this organization. The mission of the MCSC is to protect Minnesota's water resources by ensuring that the policies, permits, procedures, rules, and legislation adopted by state water resource management agencies and other regulatory entities are both meaningful and manageable from the perspective of the regulated parties.

Watershed Organizations

The following briefly describes each organization and provides some of the cooperative efforts between the City and its watershed management organization. Many examples of coordination can be found throughout this report. A map of St. Paul's watershed management organizations is found in the Appendix.

Mississippi Watershed Management Organization (MWMO)

The MWMO is a joint powers organization, which lies mainly in Minneapolis. Members include the Minneapolis Park and Recreation Board, Minneapolis, St. Anthony Park, Lauderdale and St. Paul. A small area in the northwest corner of St. Paul is within the MWMO boundary.

Lower Mississippi River Watershed Management Organization (LMWMO)

The LMWMO is a joint powers organization. Members include St. Paul, West St. Paul, Mendota Heights, Inver Grove Heights, South St. Paul, Lilydale and Sunfish Lake. The West Side of St. Paul lies within the LMWMO boundary.

Ramsey-Washington Metro Watershed District (RWMWD)

The Ramsey-Washington Metro Watershed District is located in eastern Ramsey and western Washington County. The watershed district is approximately 53 square miles and includes parts of White Bear Lake, Vadnais Heights, Gem Lake, Little Canada, Maplewood, Landfall, North St. Paul, St. Paul, Oakdale and Woodbury.

Capitol Region Watershed District (CRWD)

The Capitol Region Watershed District was formed in 1998. The watershed includes parts of St. Paul, Roseville, Maplewood, Lauderdale, Falcon Heights, the State Fairgrounds and the University of Minnesota. The watershed is considered urban and the majority of the area drains to the Mississippi River through storm sewer systems. The City contracts with CRWD to conduct the stormwater permit monitoring program. The City collaborates with the CRWD on projects and programs in the City of Saint Paul.

Performance Measures

- Projects and programs completed in partnership with other entities.

2013 Work Plan

Coordination and partnerships on capital projects, water quality programs and studies will continue. Participation with other governmental entities in Total Maximum Daily Load (TMDL) studies and implementation plans will be a significant component. The City will develop an updated Stormwater Management Program that includes coordination with other entities in order to eliminate duplication and to leverage joint resources to protect the City's critical water resources.

IX. Public Participation Process

Program Objective

The objective of this stormwater management program is to maximize the effectiveness of the City's Stormwater Program by seeking input from the public. Targeted pollutants include:

- All pollutants

Program Overview

The Annual Report is a coordinated effort by various City departments. The Permit includes an opportunity for public input in the development of the priorities and programs necessary for compliance. Information in the Annual Report covers the activities that will be implemented for the current year, and provides documentation and analysis of the activities conducted in the previous year.

Each year, the City holds a public meeting to provide an opportunity for public input regarding the Program and Annual Report. A notice of the availability of the Report for review and public comment is sent to all Saint Paul neighborhood organizations, to the governmental entities that have jurisdiction over activities relating to stormwater management, and to other interested parties.

Once finalized, the Annual Report is also made available on the web site for viewing or downloading. All testimony presented at the public meeting, and all written comments received, are recorded and given due consideration. The public comments, response to comments and a copy of the council resolution adopting the Stormwater Management Program and Annual Report Activities are submitted each year to the Minnesota Pollution Control Agency.

2013 Work Plan

The City will continue to seek and respond to public input for the Stormwater Management Program. City staff will continue to maintain and update the Stormwater website.

X. Stormwater Monitoring and Modeling

History

As part of the two part application for the NPDES permit, the City of Saint Paul conducted stormwater monitoring at 5 sites for one season. From 2001 through 2004, the Cities of Saint Paul and Minneapolis and the Minneapolis Park and Recreation Board participated in a joint stormwater monitoring program, as required by the stormwater permit. Minneapolis Park Board staff conducted the monitoring program. The Stormwater Monitoring Program Manual was completed by Minneapolis Park Board staff and submitted separately to the MPCA in April of 2001. The joint monitoring agreement was submitted to the MPCA in 2002.

Sampling sites were identified in the Stormwater Monitoring Program Manual. The sampling sites were selected from the sites used in the stormwater permit application monitoring program. Five sites were chosen, representative of the following land use types: two residential sites, two industrial/commercial sites and one mixed use site. Two sites were located in Minneapolis and three were in Saint Paul. The permit required two years of mercury monitoring, which was conducted in 2002 and 2003.

Beginning In 2005, the City began a partnership with the Capitol Region Watershed District, to conduct the stormwater permit monitoring program for Saint Paul as part of CRWD's overall monitoring program. CRWD established a monitoring program in 2004 to collect stormwater data from the major subwatersheds and stormwater best management practices (BMPs).

2012 Activities

Monitoring Program

In 2012, CRWD operated 17 stormwater monitoring stations of which 10 were full water quality monitoring stations. The Capitol Region Watershed District 2012 Monitoring Report is available on the district website at www.capitolregionwd.org.

In 2012, the City began its Stormwater Quantity and Quality Monitoring Program. Monitoring was completed at 10 stormwater volume reduction BMPs in the City of Saint Paul. Electronic water monitoring equipment was used to collect water quantity and quality data on a continuous basis from each BMP, which included:

- Water level in all of the BMPs
- Rate and volume of runoff flowing into and bypassing 4 of the BMPs
- Composite water quality sampling at 2 of the BMPs

Analysis of the collected data generated valuable information related to the performance of each BMP. This information included:

- Average infiltration rates measured in the BMPs exceeded the rates recommended in the Minnesota Stormwater Manual and watershed district rules for specific soil types.
- The BMPs are more effective at reducing stormwater volume and pollutant loads to downstream water bodies than is currently being recognized by the watershed districts.
- The Dynamic Method for sizing volume reduction BMPs was shown to be more accurate than the Simple Method. Allowing the use of the Dynamic Method in demonstrating compliance with watershed district rules would generate significant cost savings to the public.

A map summarizing the CRWD and City monitoring sites in Saint Paul can be found in the Appendix. The City's BMP monitoring program can be found on the Public Works Sewer Utility's website at http://www.stpaul.gov/index.aspx?NID=2686 .

Stormwater Runoff and Water Quality Modeling

In 2010, the City completed the first phase of a program that includes stormwater modeling, a citywide volume reduction inventory and plan to address stormwater on the 2010 Residential Street Reconstruction Program. The modeling includes the development of an XPSWMM and P8 modeling and uses the CRWD monitoring data for calibration. Three major subwatersheds, as well as the 2010 street reconstruction subwatersheds, were modeled. In 2011, the City began modeling as a component of the storm tunnel rehabilitation program. The Saint Anthony Park and Davern

subwatersheds have been modeled. In 2012, the City began modeling the Phalen Creek storm sewer interceptor. The East and West Kittsondale storm sewer system modeling project will begin in 2013. The citywide modeling map is found in the Appendix. These models will be used by the City in the development of future stormwater programs and projects.

Pollutant Loading Calculations

The estimation of pollutant loadings is found in the Appendix. In addition, the average concentrations and annual loading results for the subwatersheds monitored by the CRWD can be found in Capitol Region Watershed District's 2012 Monitoring Report. This includes Como, East Kittsondale, Phalen Creek, St. Anthony Park and Troutbrook subwatersheds.

2013 Work Plan

The City plans to continue a partnership with its watershed organizations for coordination of monitoring. The monitoring program will be described in the City's Revised Stormwater Management Program. The City also plans to continue its Stormwater Quantity and Quality Monitoring Program and stormwater modeling of subwatersheds.

XI. Storm Drain System and Drainage Areas Inventory

Storm Drain System Infrastructure

Approximately 150 years ago, Saint Paul first constructed portions of a sewer system that today comprises approximately 450 miles of storm sewers and over 26,000 catch basins. The system was designed to satisfy the City's obligation to provide reasonable drainage of stormwater and to prevent street flooding, which satisfied the City's responsibility to protect neighboring properties, allow for normal traffic flows, and prevent damage to streets, sidewalks and boulevards.

The Department of Public Works is developing a computer based asset and infrastructure management system. This system will include both the storm and sanitary sewer networks. When the asset and infrastructure management system is complete, the City will have the data and systems necessary to accurately determine the sub-watershed for each of the outfalls. The Sewer Utility is in the process of converting its hand drawn sewer maps to an electronic format. All of the converted sewer data was checked for accuracy and is now going through a QA/QC process.

Watershed and Storm Sewer Outfall Inventory

An inventory of Saint Paul's storm sewer outfalls is found in the Appendix. This inventory includes the outfall identification number, outfall name, watershed name, size of pipe and drainage area. The following information is provided in the Outfall Inventory found in the Appendix for each of the 23 watersheds in St. Paul: drainage area, land use types and distribution, population, percent impervious surface area, and the runoff coefficient. The following table shows the total number of discharge points to each water body in Saint Paul.

Discharge points to receiving waters

Receiving Water	Total Discharge Points
Bridal Veil Creek	1
Mississippi River	59
Upper Lake	1
Crosby Lake	3
Fairview North Pond	2
Lake Como	11
Loeb Lake	1
Lake Phalen	5
Beaver Lake	4
Suburban Pond	2
Little Pig's Eye Lake	1
Pig's Eye Lake	5
Battle Creek	11

Stormwater Ponds

A map showing the stormwater ponding areas in the City of Saint Paul is found in the Appendix. The Appendix also contains the tributary area and design capacity for each City ponding area and a list of ponding areas by watershed.

NPDES Permitted Facilities

Facilities in Saint Paul that area issued NPDES permits by the MPCA are found in Appendix.

Industrial Land Use

Industrial land uses may generate higher concentrations of hydrocarbons, trace metals, or toxicants than are found in typical stormwater runoff. Maps showing the areas of industrial land use in Saint Paul and pollutant source locations are included in the Appendix.

Appendix

Minnesota Pollution Control Agency

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

Permit No. MN 0061263

June 2013

Budget	2012	2013	2014	2015	2016	2017
Storm Sewer & Flood Control Projects						
Stormwater Quality Improvements	$2,240,000	$2,550,000	$1,500,000	$1,500,000	$1,500,000	$1,500,000
Storm Sewer Tunnel Rehabilitation	$2,500,000	$2,500,000	$3,500,000	$3,570,000	$3,641,400	$3,714,228
	$4,740,000	**$5,050,000**	**$5,000,000**	**$5,070,000**	**$5,141,400**	**$5,214,228**
Storm Sewer Maintenance						
Storm Sewer Inspection, Maintenance & Repair	$357,688	$364,842	$372,139	$379,581	$387,173	$394,916
Pond Inspection & Maintenance	$159,116	$162,298	$165,544	$168,855	$172,232	$175,677
Catch Basin Inspection, Cleaning & Repair	$599,048	$611,029	$623,250	$635,715	$648,429	$661,397
	$1,115,852	**$1,138,169**	**$1,160,932**	**$1,184,151**	**$1,207,834**	**$1,231,991**
Street Maintenance						
Street Sweeping	$2,892,732	$2,950,587	$3,009,598	$3,069,790	$3,131,186	$3,193,810
Neighborhood Cleanup	$128,469	$131,038	$133,659	$136,332	$139,059	$141,840
	$3,021,201	**$3,081,625**	**$3,143,258**	**$3,206,123**	**$3,270,245**	**$3,335,650**
Public Education Program	**$56,850**	**$57,987**	**$59,147**	**$60,330**	**$61,536**	**$62,767**
Storm drain stenciling						
Doorhangers						
Metro Clean Water Campaign						
Total Budget	**$8,933,903**	**$9,327,781**	**$9,363,337**	**$9,520,603**	**$9,681,015**	**$9,844,636**

2% used for annual inflation

2012 Outfall Repair Priority Report

Priority Level 1 Needs Attention 2 Monitor 3 Good	Outfall Number and Name	Condition Good Fair Poor	Condition Modifier	Action Taken	SR # or date sent downtown
1	030 Marshall	Fair	Chute deteriorating, needs rip rap	SR needs to be written up to install rip rap	1309567
1	040 Kittsondale	Good	Trees need to be removed	SR needs to be written up to remove trees	1309565
1	050 Otis	Fair	Debris in invert, left wing of outlet damaged, trees need to be removed	SR needs to be written up to remove trees & debris	1309565
1	060 Portland	Poor	6' of bottom gone, 4' broke off left side, and is undermining	Put together report and send downtown	
1	130 Highland	Poor	8' of bottom gone, undermining	Put together report and send downtown	
1	140 Sheridan	Good	Trees need to be removed	SR needs to be written up to remove trees	1309565
1	153 Rankin	Poor	end of outlet has fallen off, bank is eroding	Put together report and send downtown	
1	154 Homer	Good	Bank has major wash out	Put together report and send downtown	
1	155 Leland	Fair	5" gap around pipe	SR needs to be written up to grout pipe	1309569
1	158A Cb lead	Poor	Section of pipe has fallen off, bank is eroding	Put together report and send downtown	
1	160 Otto	Good	Trees need to be removed	SR needs to be written up to remove trees	1309565
1	180 Sumac	Good	Trees need to be removed	SR needs to be written up to remove trees	1309565
1	195 Fountain Cave	Fair	Needs some rip rap, undermining, trees need to be removed	SR needs to be written up to remove trees	1309565
1	200 Richmond	Poor	Structure deteriorating around pipe	Put together report and send downtown	
1	346 Childs Rd cb lead	Poor	Culvert collapsed, deteriorating	Was sent downtown by Okeefe	3/22/2013
1	360 Battle Creek	Good	Trees and debris needs to be removed	SR needs to be written up to remove trees and debris	1309565
1	365 Wyoming	?	Outfall needs to be located. Buried	SR needs to be written up to Locate	1309568
1	791 Highwood	Fair	Needs some rip rap, undermining, trees need to be removed	SR needs to be written up to remove trees & place rip rap	1309567
2	020 Pelham	Fair	Last 10' of structure separating	None at this time	
2	095 Berkeley	Fair	Rebar is exposed, 8' of the left side	None at this time	
2	110 Randolph	Fair	Undermining right side of the main structure about 1'	None at this time	
2	134 Ford Plant	Fair	Wire exposed on the left side	None at this time	
2	157 35E	Fair	Rebar is exposed on the right side	None at this time	
2	158 Crosby	Fair	Bank is eroding next to outlet	Part of 158A, same location	
2	170 Bay	Fair	Rebar is exposed on the top, 3' of the right corner has broken off	None at this time	
2	310 Sibley	Fair	Flap missing, deteriorating on the right side	None at this time	
2	320 Broadway	Fair	Rebar is exposed at the water line, bank eroding on the right side	None at this time	
2	330 Phalen Creek	Fair	Wings cracked on both side	None at this time	
2	340 Urban	Fair	Left wing was hit, broken up, right wing is cracked	None at this time	
2	440 Riverview	Fair	Right wing hit	None at this time	

Any other Mississippi River outfalls not listed are a Priority level 3 in good condition. Cb leads were not inspected in 2012, with the exception of 158A.

DEPARTMENT OF SAFETY AND INSPECTIONS
Bob Kessler, Director

CITY OF SAINT PAUL
Christopher B. Coleman, Mayor

375 Jackson Street, Suite 220
Saint Paul, Minnesota 55101-1806

***Telephone**: 651-266-9090*
***Facsimile**: 651-266-9124*
***Web**: www.stpaul.gov/dsi*

Standard Operating Procedures for Erosion and Sediment Control Complaint

1) Someone sees an erosion and sediment control issue (dirt on street, etc).
- They should call the City Complaints Office: 651-266-8989

2) Complaint is passed on from Complaints Office to Senior Building Inspector (651-266-9021)

3) Building Inspector follows up on complaint using DSI Erosion and Sediment Control Worksheet

4) If Building Inspector determines source is from the Public Right-of-Way (ROW) or from City Construction Projects the complaint will be forwarded to the Public Works Inspectors –
- For Private Utility Construction in ROW: 651-487-7250 (General Number for ROW Permit Section)
- For City Construction Projects: 651-266-6081 (Street Engineering Construction Division)

Public Works Inspector will inspect and follow up accordingly

5) First Inspection
- DSI Erosion and Sediment Control Worksheet completed
- If site is non-compliant: Building Inspector issues immediate verbal order, if possible, or issues a written order if no one is on site, to address situation, sets a compliance date based on the nature of the complaint, and notes details of non-compliance in Worksheet

6) Second Inspection
- Building Inspector Conducts 2nd inspection of site after compliance date
- 2nd DSI Erosion and Sediment Control Worksheet completed
- If continued non-compliance: Building Inspector issues written orders, sets a new compliance date based on the nature of the complaint, and notes details of non-compliance in Worksheet

7) Third Inspection
- Building Inspector Conducts 3rd inspection of site after compliance date
- 3rd DSI Erosion and Sediment Control Worksheet completed
- If continued non-compliance, proceed with stopping construction work at the site, or submitting the violation to the City Attorney for potential prosecution, or pursue abatement if sediment crosses boundary of the site and project is greater than 1 acre.

DEPARTMENT OF SAFETY AND INSPECTIONS
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Erosion and Sediment Control Worksheet

Property Address:

Inspector:

Permit # (if applicable):

Inspection Date:

Re-inspection Date:

Inspection Type:

Size of Site:

Inspection Results

Sewer Inlet Protection:

Comments:

Street Condition:

Comments:

Rock Entrance:

Comments:

Concrete Washout Area:

Comments:

Silt Fence/Sediment Control:

Comments:

Stock Pile Erosion Control:

Comments:

Site Erosion Control:

Comments:

Corrective Action:

Comments:

CITY OF SAINT PAUL
Christopher B. Coleman, Mayor

Public Works
Right-of Way Division

Telephone: 651-266-6151
Facsimile: 651-266-9765
Email: PW-ROWpermits@ci.stpaul.mn.us

EROSION AND SEDIMENT CONTROL FOR UTILITY PROJECTS IN THE RIGHT-OF-WAY

It is essential to prevent dirt, debris, oils and other waste from entering storm drains or water resources.

Erosion and sediment control devices are **REQUIRED** for any utility construction or grading project that will result in significant land disturbing activity in the public right-of-way.

- Sediment control practices (inlet protection and perimeter control /silt fence) must be installed **BEFORE** any land disturbance activities begin.
- Temporary land stabilization practices should be installed:
  - Daily over all temporary stockpiles on or near street (including plastic cover and temporary down drains); *and*,
  - Within 7 days after work is completed over all disturbed areas not on or near the street (including temporary seeding of spoil piles though seeding and mulching).

Refer to the Mn/DOT Pocketbook Guide (June 2009) for guidance to preventing pollutants from leaving construction sites. Note: general operations, including dewatering and concrete washout, begin on page 57.
http://www.dot.state.mn.us/environment/pdf_files/erosion-sediment-control-handbook.pdf

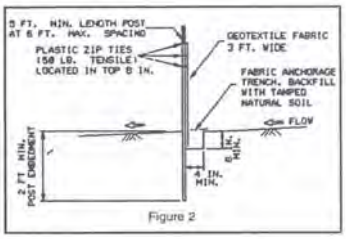

Figure 2

SILT FENCE
Silt fence is used as perimeter control to keep sediment on-site and away from areas you want to protect. For work in the right-of-way, silt fence can be installed between the top of the curb and the disturbed boulevard.

TEMPORARY SEEDING AND MULCHING OR PLASTIC COVER
Temporary seeding and mulching is to quickly provide temporary cover that will protect the soil from erosion until establishment of permanent stabilization. Applicable areas include any topsoil stockpiles and any areas disturbed by grading activities.

For areas that must be stabilized each day (located on or near the street) plastic cover should be used instead.

STORM DRAIN INLET PROTECTION
Storm drain inlet protection prevents sediment from entering a storm drain by surrounding or covering the inlet with a filtering material. This allows sediment-laden runoff to pond and settle before entering the storm drain.

The type of filter used will depend on inlet type (curb inlet or drop inlet), slope, and amount of flow. Some commercial inlet filters are placed in front of or on top of an inlet, others are placed inside the inlet and under the grate.

DAILY AND AS-NEEDED STREET SWEEPING
Street sweeping is used to clean the pavement and curb-line area on a regular basis to remove sediment, debris, and other pollutants from road and parking lot surfaces that are a potential source of pollution to waterways.

CITY OF SAINT PAUL
Christopher B. Coleman, Mayor

Public Works
Right-of-Way Division

Telephone: 651-487-7250
Fax: 651-487-7245

ROW Erosion and Sediment Control Worksheet

Project: **Project File No.**:

Property Address:

Inspection Date: **Re-inspection Date**:

Inspection Type: **Size of Site**:

Inspection Results

Sewer Inlet Protection:

Comments:

Street Condition:

Comments:

Silt Fence/Sediment Control:

Comments:

Stock Pile On or Near Street:

Comments:

Stock Pile Not On or Near Street:

Comments:

Corrective Action:

Comments:

2012 Erosion and Sediment Control Measures on RSVP Projects

Ohio Street 12-P-1365

Street sweeping - 39 hrs @ $120.00 = $4680.00
Storm drain inlet protection - 14 @ $75.00 = $1050.00
Interim sediment control CB's - 24 @ $75.00 = $1800.00
Hydraulic soil stab soil stabilizer - 800# @ $4.00 = $3200.00
Rip Rap rock checks - lump sum - $2530.28
Maintenance of CB's - $2896.77

Total cost $16,157.05

Ruth Street 12-P-1364

Street sweeping -13 hrs @ $120.00 = $1560.00
Storm drain inlet protection - 29 @ $250.00 = $7250.00
Interim sediment control CB's - 29 @ $.01 = $.29
Hydraulic soil stab soil stabilizer 0# @ $66.00 = $0.00

Total cost $8,810.29

Battle Creek - Upper Afton RSVP 12-P-8154

Street sweeping -70.5 hrs @ $120.00 = $8460.00
Storm drain inlet protection - 56 @ $250.00 = $14000.00
Interim sediment control CB's - 56 @ $60.00 = $3360.00
Hydraulic soil stab soil stabilizer 0# @ $.01 = $0.00

Total cost $25,820.00

Hewitt/Tatum 12-P-8153

Street sweeping - 87 hrs @ $120.00 = $10,440.00
Storm drain inlet protection - 71 @ $250.00 = $17,750.00
Interim sediment control CB's - 74 @ $250.00 = $18,500.00
Hydraulic soil stab soil stabilizer - 0 @ $4.00 = $0

Total cost $46,690.00

Total 2012 costs: $97,477.34

Erosion and Sediment Control
Review and Training
Field Staff

Thursday, February 2, 2012
10:00 a.m. to 12:00 p.m.

Public Works Municipal Equipment Garage
891 N. Dale Street
2nd floor Training Room

Purpose:

- To review requirements for erosion and sediment control at construction sites
- To refresh awareness and share knowledge on issues, techniques, and tasks

Who should attend:

- Construction Activity Inspectors
  - Building Inspectors (Department of Safety and Inspections)
  - Street Construction Inspectors (Department of Public Works)
- Saint Paul Regional Water Supply Foreman/Inspectors

Topics:

- Review Erosion Control Regulatory Programs (20 min.)
  - Minnesota Pollution Control Agency
    - Construction Permit
    - Municipal Permit
  - Watershed District
    - Capitol Region
    - Ramsey-Washington
- Discuss common field issues and solutions (45 min.)
  - Public Projects (e.g. Parks and Rec, Saint Paul Schools, etc.)
  - Linear Projects
  - Private Projects
- Reporting and Follow Up (30-45 min.)
  - Templates for Routine Inspections
  - Complaints
  - Other

SPILL REPORTING FORM

City of Saint Paul - Department of Parks and Recreation

INSTRUCTIONS

EMPLOYEE: Form should be filled out as completely as possible, on the same day as the spill occurred, by the individual involved in the spill. Describe all the events in as much detail as possible, especially the cleanup activities. If you have any questions regarding this form, contact your supervisor, or Environmental Services staff (651-632-5111). When completed, return form to your supervisor.

SUPERVISOR: Please return form as soon as possible to Adam Robbins, Como Central Service Facility.

Date of Spill:_____ Name (PRINT):_____

Time of spill:_____ Supervisor:_____

Section:_____ Phone number to reach you:_____

What was spilled?:_____

How much was spilled?:_____

Did the spill flow into a sewer? If yes, what type of sewer (sanitary, storm or unknown)?

_____

What type of surface did the spill occur on (soil, concrete, etc)?:

_____

Location of Spill (Be specific- address, intersection, exact location):

_____

_____

Describe what was happening when the spill occurred:

_____

_____

_____

What caused the spill (overfill, broken line, etc)? Be specific:

_____

Describe how the spill was cleaned up:

_____

_____

How were the spill cleanup materials disposed of?:

_____

List the names of other employees involved in the spill or cleanup:

_____

Was the MN Duty Officer called (651-649-5451)? _____

If yes: Who called?_____ Date_____Time_____

Duty Officer Report #:_____PCA Spill #_____

Employee Signature:_____

Spill Kit Instructions

Stop source of spill, if it can be safely done. If not, immediately call the Minnesota Duty Officer.

Contain spill. Wear gloves. Your first priority is to protect the spill from flowing into a storm sewer or drain. Use the 3" x 4' socks to create a barrier between the spill storm sewers/drains. Use the pillows to absorb pools of contained material (up to a half gallon per pillow). Small spills can be cleaned up with the absorbent pads.

Contact your supervisor or Environmental Services staff as soon as it is safe/practical to do so. If neither are available, contact the MN Duty Officer.

Complete a spill report form for all spills, **regardless of size**. The Minnesota Duty Officer must be notified for:

Petroleum (gasoline, diesel, hydraulic fluid, oil) spills of unknown amounts or over 5 gallons
Non-petroleum (antifreeze, pesticides, etc) spills of any amount

Phone Numbers
Environmental Services – (651) 632-5111
MN Duty Officer – (651) 649-5451

Disposal of used materials:
Used socks, pads and pillows should be placed in yellow hazardous waste bags found in the spill kit. Materials used to soak up petroleum spills should be disposed of in the 55 gallon barrel marked "Used Oil Sorbents" in the fuel shed at the Como Central Service Facility. For instructions on how to dispose of materials used to clean up non-petroleum substances, contact your supervisor or Environmental Services staff.

Replace used spill kit items promptly. All materials found in your spill kit are available from the Storeroom at the Como Central Service Facility.

FACILITY SPILL KIT INVENTORY	**qty**	**type**
	30	17"x19" pads
kit absorbs ~8 gallons	3	3"x4' socks
	4	2"x10"x10" pillows
	4	Hazardous Waste Bags
	2	Pair Nitrile Gloves
	4	Spill Reporting Forms

VEHICLE SPILL KIT INVENTORY	**qty**	**type**
	10	17"x19" pads
kit absorbs ~5 gallons	2	3"x4' socks
	2	Hazardous Waste Bags
	1	Pair Nitrile Gloves
	4	Spill Reporting Forms

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SAINT PAUL PARKS AND RECREATION

POLICY

DEPARTMENT

NUMBER: DIV. 4.4.2
PLACEMENT: Physical Resource Management
EFECTIVE DATE: 03/2010
UPDATED: 03/10

SUBJECT: Water Protection Policy

PURPOSE: To protect natural water bodies through the use of best management practices by all employees working near rivers, streams, lakes, ponds, and/or near storm sewers and impervious surfaces that lead to such water.

SCOPE: All Parks and Recreation employees.

POLICY STATEMENT:
As stewards of the environment, employees will take all precautionary measures to protect local water resources. The Department is committed to maintaining compliance with applicable environmental laws and regulations and to continually improve operations to prevent pollution of waterways that can harm local ecosystems and public health. This policy applies to any intentional act or unintentional act resulting from poor or neglectful work practices.

PROCEDURES (AND/OR REQUIREMENTS, EXPECTATIONS):

1. No dirt, silt, vegetation, organic material, debris, or other foreign materials will be deposited into any river, lake, stream, pond, or into any sewer system that leads to such water.

2. Employees will not blow, broom, sweep, whip, or shovel anything including dirt, silt, sand, debris, weeds, or other organic material into such body of water.

3. While performing work near such water, all debris will be picked up and removed from the site to be properly disposed of. In the event that an employee is not sure of proper disposal, the Supervisor should be called immediately.

4. No dirt, grass, organic material, debris or other foreign materials shall be intentionally deposited onto streets or other impervious surfaces without a plan for its immediate removal. This includes anything that may enter the sewer system. Exception: Sand/salt/deicers approved for controlling snow and ice when used appropriately.

5. When sweeping boulevards or edging curbs, a plan is required to immediately remove all dirt and debris deposited into the street. This may mean coordinating the clean up with Public Works or other street sweepers prior to the start of the job. If rain is expected, work should be delayed.

REQUIRED ITEMS AND/OR RELATED INFORMATION:

SECTION MANAGER'S RESPONSIBILITIES	SUPERVISOR'S RESPONSIBILITIES	EMPLOYEE'S RESPONSIBILITIES
Ensure all employees under his/her jurisdiction are aware of this policy and procedures.	Advise all employees of this policy and procedures.	Adhere to the policy.
Ensure that supervisors in his/her section enforce this policy and procedures.	Ensure that employees follow this policy and procedures.	Follow the procedures.
	Issue warnings or initiate disciplinary action as needed to ensure employee compliance.	Ask for additional training if needed.

Owner: Karin Misiewicz, Parks Supervisor **Next Review Date:** 02/11

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DEPARTMENT OF PUBLIC WORKS
Policy and Procedures
Water Protection
Number:_____ Effective Date: November 1, 2010, Revision Date:

POLICY STATEMENT:
As stewards of the environment, employees will take all precautionary measures to protect local water resources. The Department of Public Works is committed to maintaining compliance with applicable environmental laws and regulations and to continually improve operations to prevent pollution of waterways that can harm local ecosystems and public health. This policy applies to any intentional act or unintentional act resulting from poor or neglectful work practices.

PROCEDURES (AND/OR REQUIREMENTS, EXPECTATIONS):

1. No dirt, silt, vegetation, organic material, debris, or other foreign materials will be deposited into any river, lake, stream, pond, or into any sewer system that leads to such water.

2. Employees will not blow, broom, sweep, whip, or shovel anything including dirt, silt, sand, debris, weeds, or other organic material into such body of water.

3. While performing work near such water, all debris will be picked up and removed from the site to be properly disposed of. In the event that an employee is not sure of proper disposal, the Supervisor should be called immediately.

4. No dirt, grass, organic material, debris or other foreign materials shall be intentionally deposited onto streets or other impervious surfaces without a plan for its immediate removal. This includes anything that may enter the sewer system. Exception: Sand/salt/deicers approved for controlling snow and ice when used appropriately.

5. When sweeping streets or edging curbs, a plan is required to immediately remove all dirt and debris deposited into the street. This may mean coordinating the clean up with other street sweepers prior to the start of the job. If rain is expected, work should be delayed.

Policy Approval:

Rich Lallier, Public Works Director

Date: November 1, 2010

Owner: Rich Lallier	**Next Review Date:** November 1, 2010

CITY OF SAINT PAUL
Mayor Christopher B. Coleman

390 City Hall
15 West Kellogg Boulevard
Saint Paul, MN 55102

Telephone: 651-266-8510
Facsimile: 651-228-8513

Fact Sheet

Chapter 51. Allowable Discharges to the Storm Sewer System

What is the focus of the new ordinance?

This ordinance is intended to prevent pollution from entering the City's storm sewer system, which discharges directly to our lakes and the Mississippi River. The ordinance formally defines what is allowed and prohibited.

Prohibitions include, but are not limited to:

- Motor oil, paint, solvents, or other liquids poured into a catch basin;
- Grass, leaves, or landscape material intentionally disposed in the street or waters;
- Sanitary connections to the storm system; or,
- Wash water, concrete wash out to the street or other improper disposal of waste.

Why is the ordinance needed?

The Minnesota Pollution Control Agency regulates Saint Paul's stormwater under the federal Clean Water Act. This serves to protect water quality in lakes and rivers. Under this permit, the City is obligated to enact regulatory controls to prevent pollutants from entering the storm sewer system.

What is the City currently doing to address this and how will this help?

- The City educates citizens on how to prevent pollution going into the storm sewer system by working with volunteer groups to stencil "don't pollute, drains to river" graphics on city storm drains and distribute multi-lingual door hangers.
- The City addresses municipal maintenance operations by implementing policies and procedures to avoid improper behaviors leading to stormwater pollution.
- Improper discharges to the storm sewer system are currently addressed on a complaint basis.

Several existing ordinances indirectly address pollution prohibitions, but lack specificity. The new ordinance clarifies and strengthens pollution prevention controls. It better positions the City to take enforcement steps, if necessary. Public Works and DSI jointly share enforcement responsibilities.

How does this ordinance affect citizens, businesses, or other constituents?

It is difficult to generalize due to the range of potential circumstances and impacts of prohibited discharges – from raking leaves into the street to dumping oil into a storm drain.

This ordinance will primarily be used to respond to public complaints. Awareness and education about the new ordinance, and avoiding water quality impacts, will be stressed. Enforcement in the form of abatement letters may be taken, depending on the circumstance and threat to water quality.

An ordinance reenacting Chapter 51 of the Legislative Code which had been "reserved" following the repeal of its previous regulations pertaining to the registration of dwelling units on January 24, 2007 under Council File No. 06-1131. Chapter 51, as reenacted under this ordinance, controls the introduction of non-stormwater discharges to the City's municipal separate storm sewer system.

THE COUNCIL OF THE CITY OF SAINT PAUL DOES ORDAIN

Section 1.

That Leg. Code Chapter 51 is hereby re-enacted to read as follows:

Chapter 51. Allowable Discharges to the Storm Sewer System

Sec. 51.01. Purpose.

This ordinance is adopted in accordance with the City's National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer (MS4) permit which authorizes the discharge of stormwater to surface water. Pursuant to permit regulations, the City is required to control the introduction of non-stormwater discharges to the City's municipal separate storm sewer system.

Sec. 51.02. Definitions.

For the purposes of this chapter, the terms used in this chapter have the meanings defined as follows:

City. "City" means the City of Saint Paul and its officials, employees, or duly authorized agents.

Clean Water Act. The Federal Water Pollution Control Act (33 U.S.C. § 1251 et seq.) and subsequent amendments thereto.

Groundwater. Water contained below the surface of the earth in the saturated zone including, without limitation, all waters whether under confined, unconfined, or perched conditions, in near surface unconsolidated sediment or in rock formations deeper underground.

MPCA. The Minnesota Pollution Control Agency.

MS4 (Municipal Separate Storm Sewer System). The system of conveyances including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels or storm drains that is: owned and operated by the City, or other public entity, and designed or used for collecting or conveying stormwater, and which is not used for collecting or conveying sewage.

National Pollutant Discharge Elimination System (NPDES) Stormwater Discharge Permit. A permit issued under the Clean Water Act (Section 301, 318, 402, and 405) and United States Code of Federal Regulations Title 33, Section 1317, 1328, 1342, and 1345 authorizing the discharge of pollutants to water of the United States.

Non-Stormwater Discharge. Any substance not composed entirely of stormwater.

Prohibited Discharge. Any introduction of non-stormwater discharge to the City's municipal separate storm sewer system or to surface waters within the City, unless specifically exempted under section 51.03(b) of this chapter.

Person. "Person" means any individual, association, organization, partnership, firm, corporation, or other entity recognized by law, acting as either the owner or as the owner's agent.

Pollutant. Any substance which, when introduced as non-stormwater, has potential to or does any of the following:

(1) Interferes with state designated water uses;
(2) Obstructs or causes damage to waters of the state;
(3) Changes water color, odor, or usability as a drinking water source through causes not attributable to natural stream processes affecting surface water or;
(4) Adds an unnatural surface film on the water;
(5) Adversely changes other chemical, biological, thermal, or physical condition, in any surface water or stream channel; or
(6) Harms human life, aquatic life, or terrestrial life.

Stormwater. Defined under Minnesota Rule 7077.0105, subpart 41(b), and means precipitation runoff, stormwater runoff, snow melt runoff, and any other surface runoff or drainage.

Surface Water. Ponds, lakes, rivers, streams, and wetlands.

Sec. 51.03. Non-Stormwater Discharges.

(a) No person shall cause any non-stormwater discharges to enter the City's municipal separate storm sewer system, or to any surface waters within the City, unless specifically exempted under paragraph (b) of this section.

(b) The following allowable discharges are exempted from this section:
(1) Non-stormwater that is authorized by an NPDES point source permit obtained from the MPCA;
2) Fire fighting activities and fire suppression systems;

(3) Dye testing for which the City has received written notification prior to the time of the test;
(4) Water line flushing or other potable water sources;
(5) Landscape irrigation or lawn watering;
(6) Diverted stream flows;
(7) Rising groundwater;
(8) Groundwater infiltration to storm drains;
(9) Uncontaminated pumped groundwater;
(8) Foundation or footing drains (but not including active groundwater dewatering systems);
(9) Air conditioning condensation;
(11) Springs;
(12) Non-commercial washing of vehicles;
(13) Natural riparian habitat and wetland flows;
(14) Dechlorinated swimming pool water;
(15) Street wash water discharges;
(16) Activities undertaken by the City, or by written authority of the City, deemed necessary to protect public health, welfare, or safety; and,
(17) Any other water source not containing a pollutant.

(c) No person shall intentionally dispose of substances including, but not limited to, grass, leaves, dirt, or landscape material into the City's municipal separate storm sewer system or to any surface waters within the City.

Sec. 51.04. Prohibited MS4 Connections.

No person shall construct, use, or maintain any connection to intentionally convey non-stormwater to the City's municipal separate storm sewer system. This prohibition expressly includes, without limitation, connections made in the past regardless of whether the connection was permissible under law or practices applicable or prevailing at the time of connection. A person is considered to be in violation of this ordinance if the person connects a line conveying non-stormwater to the storm sewer system, or allows such a connection to continue.

Sec. 51.05. Suspension of Storm Sewer System Access, Emergencies.

The City may, without prior notice, suspend MS4 discharge access to a person where it is determined that suspension is necessary to stop an actual or threatened discharge that presents or may present imminent and substantial danger to the environment, or to the health or welfare of persons, or to the MS4 or public waters. If the violator fails to comply with a suspension order issued in an emergency, the City may take any step deemed necessary to prevent or minimize damage to the storm sewer system or public waters, or to minimize danger to persons.

Sec. 51.06. Access, Administrative Search Warrants.

If access to any part of a premises from which stormwater is discharged has been refused and, upon a demonstration of probable cause to believe that there may be a violation of this chapter, or that there is a need to inspect and/or sample as part of a

routine inspection and sampling program designed to verify compliance with this ordinance or any order issued hereunder, or to protect the overall public health, safety, and welfare of the community, the City may seek an administrative search warrant from a court of competent jurisdiction.

Sec. 51.07. Criminal Violation, Enforcement.

Any person failing to comply with or violating any section of this chapter shall be guilty of a misdemeanor and, upon conviction thereof, may be punished by fine, by imprisonment, or both, as provided under section 1.05 of this Code. All City approvals and permits shall be suspended until the violation(s) of this Chapter are corrected. Nothing in this section shall preclude the City from concurrently seeking the enforcement of the provisions of this chapter in a court of competent jurisdiction by civil action to enjoin any continuing violation(s).

Sec. 51.08. Each Day a Separate Offense.

A separate offense shall be deemed committed upon each day during or when a violation occurs or continues.

Sec. 51.09. Public Nuisance

A violation of this ordinance is a public nuisance subject to abatement pursuant to City Code Chapter 45. When the City finds that a person has violated or failed to meet a requirement of this section, the person is deemed to have created a public nuisance per se subject to an injunction or any other appropriate remedy to prevent activities which would create further violations or compel a person to perform an abatement or remediation of the violation which the City may seek from a court of competent jurisdiction. All city approvals and permits shall be suspended until abatement of the nuisance condition(s). Nothing in this section shall preclude the City from concurrently seeking the enforcement of the provisions of this Chapter by criminal prosecution.

Sec. 51.10. Administration.

The departments of safety and inspections or public works, as the case may be, shall as determined, be responsible for the administration, implementation, and enforcement of the provisions of this Chapter.

Section 2.

This Ordinance shall be in full force and effect thirty days (30 days) from and after its passage, approval, and publication.

St. Paul Water Quality Education Project
2012 Final Report

Submitted by Friends of the Mississippi River
December 20, 2012

Storm Drain Stenciling

Outings: In 2012, Friends of the Mississippi River coordinated the stenciling of 2,776 storm drains and the distribution of 9,198 door hangers in partnership with 1,281 volunteers from 34 school and college groups, community groups, corporations and residents of the City of St. Paul, contributing a total of 3,035 hours of volunteer work.

FMR met or surpassed the goals set out in the contract for volunteer numbers, volunteer hours and number of storm drains stenciled. However, the number of door hangers distributed fell slightly short of the goal. Eight events were cancelled due to weather in addition to 2 other cancellations made by groups or by program staff. Of these 10 events, 8 could not be re-scheduled, including a portion of the Oct. 13 Girl Scouts Centennial Day of Service event (afternoon session canceled for rain), resulting in a total loss of approximately 400 anticipated volunteers.

A list of the 34 groups and event dates with goals achieved is attached to this report.

Outreach: Storm drain stenciling was promoted using the following means:

- Emailing past participants in FMR database
- Posting on FMR's website and facebook page, as well as announcements in FMR's email newsletter *Mississippi Messages*
- Postings on other websites including VolunteerMatch, TwinCities.com, Do It Green, TC Daily Planet, Next Step, Green Hands USA, Minnesota Parent and River Network
- Announcement at Big River Journey teacher training in Spring 2012

Equipment: FMR staff coordinated the purchase, storage, and maintenance of storm drain stenciling supplies and door hangers for the 2012 season. The Capitol Region Watershed District provided financial assistance to purchase extra stencils and spray paint for the Girl Scouts' Centennial Day of Service event on Oct. 13, for which we anticipated engaging over 400 volunteers. Below is an inventory of supplies remaining at the end of the 2011 season:

November 2011 Inventory					
SUPPLIES	**##**	**SUPPLIES**	**##**	**SUPPLIES**	**##**
STENCILS:		Traffic Cones	23	Pairs of Gloves	200
Mississippi River	88	Safety Vests	86	Trash Bags	150
Lake	24	Clipboards	35	Cans of Paint	73
Creek	22	Safety Glasses	54	Doorhangers	1000
Spanish	7	Wire Brushes	18		
Somali	12	Wisk Brooms	34		
Hmong	12	Buckets	21		

Educational Programming

Program Assistant Katie Clower and/or Stenciling Assistant Adam Flett provided a 30-45 minute educational program on urban runoff pollution to each of the 34 St. Paul stenciling groups. Staff also made 3 extra education presentations to approximately 270 participants ranging in age from 4th graders through adults. These presentations were designed to increase knowledge about urban non-point source pollution and related environmental issues.

Extended water quality lessons are group-specific, but may include demonstrations, experimentations, or discussions about any of the following: the water cycle; wastewater; storm water management; non-point source pollution prevention; urban lawn and garden care; or the role of plants in water quality. Students may observe and trace the movement of water on land and pavement or learn about innovative approaches to managing storm water runoff.

Educational Presentations:

9/21/12 Post-performance presentation at People's Theater production of 'Once Upon a River' – Neighborhood House – 80 participants

9/26/12 Children's Water Festival – St. Paul Fairgrounds, 6 presentations to 6 schools – 160 students

10/05/12 Educational Outing at Harding High Native Plant garden – Harding High School Earth Club – 30 students

Litter Pick-up Events

FMR organized two litter pick-up events. One was along the shoreline at Beaver Lake Park, and the second was along the Mississippi River in Hidden Falls Park. FMR provided gloves and bags, and coordinated trash collection through the City of St Paul Parks and Recreation Department.

Litter pick-ups:

8/27/12 Northwestern College, Beaver Lake Park:
54 volunteers, 27 hours

9/10/12 McKnight Foundation, Hidden Falls Regional Park:
30 volunteers, 45 hours

Community Workshops - Watershed Friendly Yardcare, Rain Barrels

FMR's River Stewardship Coordinator Karen Solas presented the watershed protection workshop "Gardening for a Rainy Day: Native Plants, Rain Gardens, & Lawncare for Water Quality." The workshop focused on urban homeowner education: alternative lawncare practices, landscaping with native plant species, the proper use of lawn fertilizer, rain barrels, backyard composting, and soil testing were discussed using a PowerPoint presentation. The workshop also introduced the concept of rain gardens and provided information about resources for homeowners interested in exploring this as an innovative stormwater management technique. A variety of printed materials and resource information was made available to participants to take home.

The content was presented to 51 community members at two workshops in Roseville and St. Paul:
• Roseville REI, April 2, 2012 (29 participants)
• Wilder Center, May 15, 2012 (22 participants)

Additionally, Karen presented a version of this workshop, which included a special focus on rain barrels, to 36 community members on Wednesday, November 14, 2012 at the Minnesota Humanities Center in St. Paul. This "Make and Take Rain Barrel Workshop" began with a condensed presentation on the topics covered in the "Gardening for a Rainy Day" workshop, with additional

information on the construction, use, installation, and benefits of rain barrels. Participants were then guided through assembling their own rain barrel, which they took with them to install and use at home. Twenty-five rain barrels were assembled.

Planning for the workshops included research on the impact of stormwater pollutants on water quality, best practices for rain garden design and installation, benefits of and techniques for composting in residential yards and gardens, rain barrel assembly, installation, and use, and watershed-friendly lawn care strategies. Staff also compiled a host of printed materials on these topics that were distributed at the workshops.

Wetland Ecology Interpretive Program at Crosby Park

Participants explored the plant life in and around Crosby Park's Upper Lake and thae surrounding marsh, learning about the important role wetland plants play in providing habitat and filtering pollutants from water. Dip nets were used to take a closer look at macro-invertebrates and discuss what they reveal about the impacts of water pollution.

In spite of pouring rain, 27 participants attended the event, which was held on June 16, 2012.

Rain Garden Walking Tour

FMR hosted a tour of St. Paul rain gardens on August 22, 2012, co-led by Forrest Kelley of Capitol Region Watershed District (CRWD) and Ryan Johnson of Ramsey Conservation District. The tour featured rain gardens constructed by CRWD and St. Paul's Department of Public Works in a subwatershed of Como Lake as part of the Arlington Pascal Improvement Project. 13 community members attended the tour.

The State of the River Report Release

FMR Watershed Program Director Trevor Russell and Mississippi National River and Recreation Area Water Quality Coordinator Lark Weller, principal authors of the State of the River Report, presented on the wealth of water quality and aquatic ecosystem data found in the report. They highlighted key trends and emerging issues that impact the river and provided an overview of potential solutions to protect our river and its watershed.

The presentation was followed by a hosted conversation with Trevor, Lark, and additional experts who were involved in the making of the report. Attendees had the opportunity to contribute questions to the discussion.

Approximately 220 people attended the event, which was held at the Science Museum of Minnesota on September 27, 2012.

Outreach and Program Promotion

Participants for the workshops, rain garden tour and Science Museum presentation were recruited using the following means:

- Emailing to St. Paul neighborhood contacts, city council members and planning districts
- Emailing to all St. Paul FMR contacts, including numerous partner and civic organizations such as the Science Museum of Minnesota, the Department of Natural Resources, Metropolitan Council, Friends of the Parks and Trails of St. Paul, and additional various foundation, student and civic groups
- Emailing to garden clubs (worshops and tour) and academic, water quality and agriculture-related contacts (SMM)
- Email to active FMR St. Paul contacts (workshops, tour and SMM)
- Posting on FMR's website and announcements in FMR's Mississippi Messages
- Press releases via email to daily and community newspapers and radio
- Announcements on various online event calendars: Mississippi National River and Recreation Area/National Park Service, Minnesota Environmental Forum, Minnesota Environmental Partnership, MNOEA's Next Step, TwinCities.com/PioneerPress/Zvents, BlueThumb (as needed), Do It Green, TC Daily Planet, Northern Gardener, Forum of Women in the Environmental Field, Minnesota Master Naturalist, GreenHandsUSA,

Minnesota Waters, Riverfront Development Corporation, 1Mississippi (Mississippi River Network) and Good Age and MN Parent websites.

PLEASE DON'T POLLUTE
DRAINS TO
MISSISSIPPI RIVER

Have you seen this message near a storm drain?

Community volunteers have posted this message on storm drains in your neighborhood to remind you to keep pollutants off the streets, driveways and sidewalks and out of storm drains.

Storm drains are part of the storm sewer system which carries water from rainfall and snowmelt directly from your neighborhood to our local rivers, lakes, streams and wetlands.

This water becomes polluted when it picks up things like grass clippings, leaves, pesticides, motor oil, trash and pet waste and flushes them into storm drains.

Remember ...

Never dump anything into a storm drain!

Stormwater is NOT treated by a waste-water treatment plant, and therefore it is a direct route for pollutants to enter our waterways.

What You Can Do ...

Use zero-phosphorus fertilizer and follow proper application procedures. Sweep spilled fertilizer off of paved surfaces.

Avoid pesticides and other lawn chemicals or use them responsibly - keep them off of paved surfaces.

Keep leaves and grass clippings out of the street - compost or bag them for disposal.

Keep your vehicle tuned up and clean up any oil leaks or spills from paved surfaces.

Wash your car on the lawn or at a carwash—not in the driveway or street.

Pick up pet wastes.

Don't litter.

Dispose of paint and other household hazardous wastes properly - NEVER down a storm drain!

For more information on how to dispose of or recycle yard trimmings and hazardous wastes...

Call 651/633-EASY

To volunteer for the storm drain stenciling project with Friends of the Mississippi River...

Call 651/222-2193

Co-sponsored by the City of St. Paul Public Works and Friends of the Mississippi River.

Printed on 30% post-consumer recycled paper

Artwork courtesy of Nora Wilgen and St. Paul Neighborhood Energy Consortium.
MAY 2002

La lluvia arrastra el contenido de la tierra de su jardín y de la calle hasta el río Mississippi.

Cuando llueve, el agua corre por los jardines, las aceras y las calles del vecindario, arrastrando a su paso restos de hierba, hojas, productos químicos para el tratamiento de césped, aceite de motor, basura y heces de animales domésticos. Cuando el agua de lluvia llega hasta las alcantarillas de las calles, la calidad de los lagos y de los ríos de la zona se ve afectada, inutilizándolos para la natación o la pesca.

Aquí tiene algunas de las cosas que se pueden hacer para ayudar a proteger el río Mississippi.

No contamine el entorno

Nunca vierta pintura o productos químicos en una alcantarilla

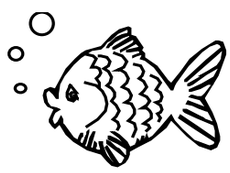
Limpie inmediatamente el aceite de motor que se haya vertido o esparramado

Recoja las heces de su animal doméstico

Mantenga la calle libre de hojas y de restos de hierba

Evite el uso de productos químicos para el tratamiento de césped, o úselos con precaución.

Limpie los fertilizantes y productos químicos derramados sobre la superficie de las aceras



Koj puas paub tias dej nag pus tau tej yam khoom ntawm koj tog vaj tog tsev thiab kev tsheb mus rau Mississippi River?

Thaum los nag, dej yuav ntws mus rau ib cheeb tsam neeg zej zog cov hav nyom, kev taug thiab kev tsheb, nws yuav pus tau tej nyom, nroj tsuag, nplooj ntoo, tshuaj tshuag nyom, los yog tshuaj tua kab tua ntsaum, tej roj rau tsheb, khib nyiab, thiab tsiaj cov quav. Thaum cov dej nag ntxuav mus rau ntawm cov qhov hlau nyob rau ntawm nej ntug kev, cov khoom tsis zoo no yuav ua rau kom peb cov pas dej thiab cov dej ntws puas thiab tsis zoo siv ua luam dej thiab nuv ntses.

Qhov no yog tej yam koj ua tau kom pab tis thaiv tus dej Mississippi River.

Txhob pov khib nyiab rau nraum zoov

Txhob hliv xim los yog lwm yam tshuaj rau hauv cov qhov hlau teev dej

Tu roj tsheb ua nrog los sis txeej kom sai li sai tau sim ntawd

Khaws tsiaj tej quav

Txhob pub nplooj ntoo, nyom, nroj tsuag mus rau hauv cov kev tsheb

Txhob siv tshuaj tshuag nyom, los sis yog siv, tau xyuam xim

Cheb thiab tu tej chiv thiab tshuaj uas nchuav rau ntawm tej kev puas xis ma los yog cov kev pua tau

Metro WaterShed Partners & Clean Water MN

2012 Annual Program Report

WATERSHED
PARTNERS

MINNESOTA WATER
LET'S KEEP IT CLEAN

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Metro WaterShed Partners 2012 Report

Introduction

Metro WaterShed Partners is a coalition of more than seventy public, private and non-profit organizations in the Twin Cities metro area. Through collaborative educational outreach, the Metro Watershed Partners promote a public understanding that inspires people to act to protect water in their watershed. Since 1996, Watershed Partners have cooperated through educational projects, networking, and resource-sharing.

WATERSHED PARTNERS

The mission of the Metro WaterShed Partners is two-fold:

- to provide and promote collaborative watershed education products with consistent messages to the general public, local government staff, and elected officials, and
- to provide WSP members a place and means for an information clearinghouse, a source of idea generation, and the coordination, collaboration, and support for watershed education programs.

In 2012, we remained a viable collective of mutually supporting watershed educators that create and implement effective educational programs. In response to our fund-raising letter, members contributed $20,250 this year to support our monthly meetings, exhibit checkout, administrative support and state fair outreach.

Leadership

The work of **Metro WaterShed Partners** is guided by a steering committee that includes stormwater education professionals from cities, watersheds, non-profit organizations, and government agencies. In 2012, our steering committee members were:

Angie Hong – Washington Conservation District
Anne Weber – City of St. Paul
Carrie Magnuson – Ramsey Washington Metro Watershed District
Jen Dullum – City of Farmington
Lyndon Torstenson – National Park Service, Mississippi National River & Recreation Area
Peggy Knapp – Freshwater Society
Trevor Russell – Friends of the Mississippi River
Tracy J. Fredin – Hamline University

2012 Accomplishments

Networking and Sharing Resources

The WaterShed Partners hold monthly meetings that provide members with the means to gather, share information, generate ideas, and form partnerships that support watershed education in the state of Minnesota. These meetings keep our membership up to date on new developments in the field of water resources and water education by featuring presentations by experts in fields such as watershed management, education, marketing, legislation and outreach.

In 2012, WaterShed Partners held eleven meetings that were attended by an average of thirty-six members; an increase of 12% over 2010. We are pleased with what we perceive to be the ever-increasing energy for collaboration and information-sharing among partners. The presenters at our 2012 meetings are listed below.

2012 WaterShed Partners
Meetings and Presentations

January	Michelle Vigen, UMN, CERTS	Community-Based Social Marketing: A Process for Sustainable Outcomes
February	Peggy Knapp, Freshwater Society	Facilitated work session
March	Dr. Dan Engstrom, Director of the St. Croix Watershed Research Station and AdjunctProfessor, Geology & Geophysics, and Water Resource Science, UMN	The Real Dirt on Sediment: Water Quality & the Mississippi River
April	Cliff Aichinger, RWMWD	Maplewood Mall Stormwater BMP Project
May	No presentation	
June	Paul Machajewski and Thomas Novak, Army Corps of Engineers, Jeff Janvrin, Wisconsin DNR, *Potential alteration and restoration in lower pool 2.* John Anfinson, National Park Service, and Tim Schlagenhaft, Minnesota DNR, *Threat of Asian Carp*	Fifth annual boat outing, this year on pool 2 and in collaboration with the Mississippi Makeover, Friends of Pool 2, US Army Corps of Engineers, the National Park Service, and the Wisconsin and Minnesota DNR
July	SUMMER BREAK	
August	Adam Warthesen, Land Stewardship Project	The Farm Bill: Dynamics of federal farm policy
September	Dr. Kristen Nelson, Environmental Sociologist at the University of Minnesota's Department of Forest Resources and Department of Fisheries, Wildlife, and Conservation Biology, and Principal Investigator on the Twin Cities Household Ecosystem Project (TCHEP), and Dr. Maria Dahmus, Environmental Studies, the University of St. Thomas	Twin Cities Household Ecosystem Project (TCHEP)
October	Trevor Russell, Watershed Program Director at FMR, and Lark Weller, Water Quality Coordinator for the Mississippi National River and Recreation Area	State of the River Report
November	WaterShed Partners steering committee, facilitated by Peggy Knapp, Freshwater Society	"Art of Hosting" discussion on possible future directions for the Metro WaterShed Partners
December	End of the year potluck	

WaterShed Partners listserv

The Metro Watershed Partners' listserv is a forum for information sharing to an audience of watershed educators, legislators and industry professionals throughout the state.

In 2012, the Metro WaterShed Partners listserv continued to provide more than one hundred user-members with an effective tool for promoting educational programs, sharing information about professional programs, and exchanging information with other watershed educators, legislators and businesses. The email address for the listserv is watershedpartners@listserv.hamline.edu. If you would like to send and receive emails from the listserv, send a request to Jana Larson at jlarson25@hamline.edu.

Education and Outreach

Eco-Experience: This year, WaterShed Partners piloted *StormDrain Goalie* in the kids area of the Minnesota State Fair's Eco-Experience building.

The project consisted of three interconnected elements:

1. ***StormDrain Goalie*** **iPad game** – an arcade-style iPad game that engages users in preventing common nonpoint source (NPS) pollutants from entering a storm drain.
2. ***StormDrain Goalie*** **photo booth** – allows visitors to take their photo as a "StormDrain Goalie," (see above) and share their photo, along with a message about protecting clean water, to social networks via social media.
3. ***StormDrain Goalie*** **Facebook page** – collects photos and pledges, and facilitates ongoing communication about water sustainability to Facebook "friends" and their social networks.

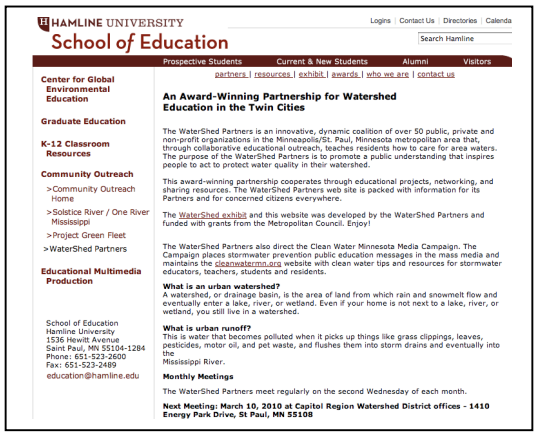
An estimated 250,000 people went through the Eco-Experience building. About 800 of them dressed up as a "StormDrain Goalie," made a pledge to defend clean water in Minnesota, and shared their photo and pledge via facebook and email.

Minnesota Department of Natural Resources (DNR) building:
At the DNR building, Metro WaterShed Partners use museum-quality, table-top displays and interactive computer kiosks to educate Minnesotans about metro watersheds and how everyday actions impact lakes, rivers and streams. More than 30,000 people engaged with our watershed displays and interactive kiosks this year at the Minnesota State Fair.

Community events:
Throughout the year, Metro WaterShed Partners make our table-top exhibits available (free of charge) to organizations doing education and outreach about non-point source pollution and clean water. In 2012, Freshwater Society, Ramsey-Washington Metro Watershed District, City of Minnetonka, Met Council Environmental Services, Ramsey County, the West Metro Water Alliance, Girl Scouts of Minnesota and the Center for Global Environmental Education used these exhibits to implement clean water education throughout the state. If you are interested in checking out one of our kiosks or table-top exhibits for an event in your community, you can find more information and a check-out form at: http://www.hamline.edu/education/environmental/cgee/watershed/exhibit/index.html

WaterShed Partners website

The Watershed Partners website is hosted by Hamline University at: www.hamline.edu/cgee/watershed. It acts as the primary archive of meeting minutes, agendas and presentations for the WaterShed Partners, along with a list of our activities and achievements, descriptions of our exhibits, information for new and continuing members of the WaterShed Partners, and a directory of our partner members.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>Community Outreach Home
>Solstice River / One River Mississippi
>Project Green Fleet
>WaterShed Partners
Educational Multimedia Production

School of Education
Hamline University
1536 Hewitt Avenue
Saint Paul, MN 55104-1284
Phone: 651-523-2600
Fax: 651-523-2489
education@hamline.edu

An Award-Winning Partnership for Watershed Education in the Twin Cities

The WaterShed Partners is an innovative, dynamic coalition of over 50 public, private and non-profit organizations in the Minneapolis/St. Paul, Minnesota metropolitan area that, through collaborative educational outreach, teaches residents how to care for area waters. The purpose of the WaterShed Partners is to promote a public understanding that inspires people to act to protect water quality in their watershed.

This award-winning partnership cooperates through educational projects, networking, and sharing resources. The WaterShed Partners web site is packed with information for its Partners and for concerned citizens everywhere.

The WaterShed exhibit and this website was developed by the WaterShed Partners and funded with grants from the Metropolitan Council. Enjoy!

The WaterShed Partners also direct the Clean Water Minnesota Media Campaign. The Campaign places stormwater prevention public education messages in the mass media and maintains the cleanwatermn.org website with clean water tips and resources for stormwater educators, teachers, students and residents.

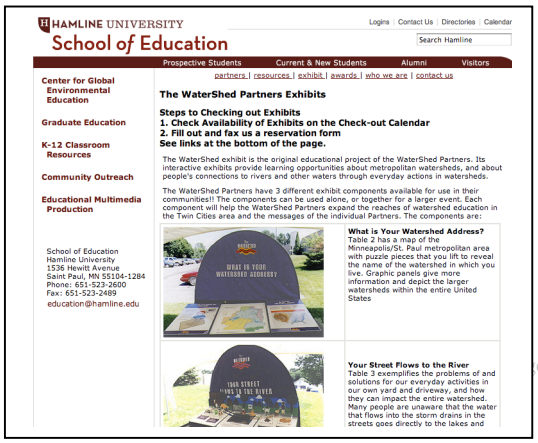
What is an urban watershed?
A watershed, or drainage basin, is the area of land from which rain and snowmelt flow and eventually enter a lake, river, or wetland. Even if your home is not next to a lake, river, or wetland, you still live in a watershed.

What is urban runoff?
This is water that becomes polluted when it picks up things like grass clippings, leaves, pesticides, motor oil, and pet waste, and flushes them into storm drains and eventually into the Mississippi River.

Monthly Meetings

The WaterShed Partners meet regularly on the second Wednesday of each month.

Next Meeting: March 10, 2010 at Capitol Region Watershed District offices - 1410 Energy Park Drive, St Paul, MN 55108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The WaterShed Partners Exhibits

Steps to Checking out Exhibits
1. Check Availability of Exhibits on the Check-out Calendar
2. Fill out and fax us a reservation form
See links at the bottom of the page.

The WaterShed exhibit is the original educational project of the WaterShed Partners. Its interactive exhibits provide learning opportunities about metropolitan watersheds, and about people's connections to rivers and other waters through everyday actions in watersheds.

The WaterShed Partners have 3 different exhibit components available for use in their communities!! The components can be used alone, or together for a larger event. Each component will help the WaterShed Partners expand the reaches of watershed education in the Twin Cities area and the messages of the individual Partners. The components are:

What is Your Watershed Address?
Table 2 has a map of the Minneapolis/St. Paul metropolitan area with puzzle pieces that you lift to reveal the name of the watershed in which you live. Graphic panels give more information and depict the larger watersheds within the entire United States

Your Street Flows to the River
Table 3 exemplifies the problems of and solutions for our everyday activities in our own yard and driveway, and how they can impact the entire watershed. Many people are unaware that the water that flows into the storm drains in the streets goes directly to the lakes and

CleanwaterMN.org website

Educational resources for stormwater educators, and information about Clean Water Minnesota and its *Minnesota Water, Lets Keep It Clean!* media outreach can be found at http://cleanwatermn.org. See page 10 of this report for more information on the site.

Clean Water Minnesota
2012 Media Campaign Report

Introduction

Clean Water Minnesota is a collaborative outreach project of the Metro WaterShed Partners.

Working together, we develop and deliver innovative storm water education messages to the Twin Cities metro area and beyond. We place storm water pollution prevention messages on radio, television, billboards and more – a feat not possible for any one of our partners alone.

MINNESOTA WATER
LET'S KEEP IT CLEAN

Media Campaign Leadership

Jana Larson from the Center for Global Environmental Education at Hamline University manages the Clean Water MN media campaign. The work of Clean Water Minnesota is overseen by the WaterShed Partners steering committee. In addition, we hold annual meetings where stakeholders can advise us on how best to serve the needs of supporting MS4s.

2012 Accomplishments

Clean Water Minnesota placed storm water pollution prevention messages on Minnesota Public radio, during radio broadcasts of Minnesota Twins games, and on Comcast television. We also expanded our outreach activities by piloting *StormDrain Goalie* at the Minnesota State Fair, using social media to actively foster and support citizens to adopt new water friendly behaviors, and to promote water friendly behaviors via social networks. We welcome inquiries, feedback and suggestions from our partners on these activities.

Clean Water MN challenge

Knowledge and awareness are not enough to create behavior change. In 2011 we conducted a review of behavior change literature and studies on best practices in social marketing, social media, and behavior change. Using that research, we drafted a proposal to use web-based multimedia tools and community-based social marketing strategies to engage local residents in sustainable, water-friendly behaviors in the Twin Cities Metro area.

This plan was developed to address a need, identified by the WaterShed Partners in 2010, to develop watershed education programs that:

- lead to behavior change
- have a mechanism to measure that behavior change
- tell the story of change through success stories
- convey messages in an artful and compelling way

To support this work in 2012, Hamline University developed and submitted several grant proposals:

- In January of 2012, Hamline University submitted a grant to the EPA Urban Waters grant program to support a Clean Water MN pilot in the Seward and Longfellow neighborhoods. This pilot is based on a study commissioned by The Mississippi Watershed Management Organization that identifies archetypes in the Longfellow and Seward neighborhoods, one of which is the Do-It-Yourself-ers,

(DIYers). This target audience is the most likely to take action to protect their local waters. Phase I of this pilot project uses social media and social marketing strategies to encourage DIYers to do the following: 1) lawn care and gardening for clean water (minimizing fertilizers, herbicides, and pesticides); 2) composting yard waste and organic materials (managing leaves, grass clippings and organics); 3) keeping water on their property by reducing the amount of impervious surface; planning and designing rain gardens; diverting rain gutters; and using rain barrels.

- In June of 2012, we developed and submitted a grant to the National Fish and Wildlife Foundation to create a *Homeowners Toolkit for Sustainability*, aimed at fostering the adoption of sustainable land management practices among a target audience of nearly 50,000 people in 35 faith communities; and to promote broad-based civic engagement in watershed protection and responsible stewardship of public and private lands to enhance local waterways.
- In August, we piloted *StormDrain Goalie* at the Minnesota State Fair Eco-experience (see page 5 for more information).
- In September we submitted grant proposals to Minnehaha Creek Watershed District and the Mississippi Watershed Management Organization to further develop and support *StormDrain Goalie.*

For more information on the Challenge project, contact Jana Larson: jlarson25@hamline.edu.

Purchased Media

This year, Clean Water Minnesota created an estimated 4,573,987 media impressions on radio and television. The lower number of impressions made by Clean Water MN this year is attributable in part to the following: 1) More than 2/3 of the impressions made during our campaign on Comcast are garnered by inclusion in a free PSA rotation; these impressions depend on the number of free spots available and the number of "competing" PSAs in the rotation. This was likely impacted by the election year. 2) Nielsen has changed its method of measuring impressions, going from a diary based method to a "people meter;" this change has made impression numbers lower across the board. 3) Twins listenership was down, perhaps because they weren't playing as well this year.

Radio Public Service Announcements (PSAs)

MN Public Radio (MPR)

Dates: November 26 – December 31, 2012
Placements: Streaming and On-Air PSAs on KNOW (91.1FM) and 89.3 The Current Streaming
KNOW-FM: 8 spots
KNOW-FM Stream: 40 spots
89.3 The Current pre-roll streaming
Total Investment: $2,790.00
Total Impressions: 623,391
Audience: Statewide

The Clean Water MN Media Campaign runs a statewide PSA on Minnesota Public Radio because surveys of MPR listeners show they are very likely to take action on environmental messages they hear on MPR; more so than any other radio listeners in Minnesota.

The CWMN Media Campaign ran on-air and streaming online 'gateway' PSAs on KNOW-FM (91.1) and on 89.3 the Current from December 1 – December 31, 2012.

Our Minnesota Public Radio PSAs featured the following message:

"Programming is supported by Metro Watershed Partners, reminding you that sidewalk salt pollutes lakes and rivers. Using less salt by shoveling before salting, and salting only on warm or sunny days, protects water. More at clean-water-M-N-dot-org."

Twins Radio Network
Dates: May 1 – June 3, 2012
Placements: 30 in-game ads, plus 9 bonus spots during game delays.
Total Investment: $9,300.00
Total Impressions: 2,733,900
Audience: Twin City Metro Area

Twins games were broadcast on 1500 ESPN Twin Cities during the 2012 regular season.

The following ad played during Minnesota Twins baseball games:

"Mowing your lawn? Grass clippings that blow onto streets and sidewalks flow into lakes and rivers, feeding algae, which turns water green. Keep clippings on your lawn. The fish thank you. Clean streets, clean water. More at clean-water-m-n-dot-org."

According to the 2011 Scarborough Research release, Twins Radio reached 45% of the Twin Cities adult population (57% of adult males).

Television Public Service Announcements (PSAs)

Comcast Spotlight Cable Television PSAs
Dates: September 10 – October 14, 2012
Placements: 350 spots, more than half provided as free bonus ads by Comcast
Total Investment: $12,699.85
Total Impressions: 1,655,887
Audience: Statewide

In 2012, Clean Water Minnesota ran 30-second PSAs on the following networks: AEN, AMC, ANPL, BET, BRVO, BTMN, CMDY, CNBC, CNN, DISC, DIY, ENN, ESP2, ESPC, ESPN, ESPN, ETV, FOOD, FSNO, FX, FXNC, GAC, GOLF, HALL, HGTV, HIST, HLN, LIFE, MNBC, MTV, NBCS, NGC, OXYG, SOAP, SPK, SYFY, TBSC, TNT, TRAV, TRU, TVL, TWC, USA, VH1, WE

Comcast Cable featured the following public service announcement:

"Plop" Fish Bowl PSA – 30 seconds

Adapted from a PSA produced by the City of Austin, Texas, "Plop" features a fish bowl that becomes increasingly contaminated as common stormwater pollutants 'plop' into the fish bowl.

"Your street connects directly to lakes and rivers. If your car drips oil or antifreeze on the ground (pause) it washes into storm drains, and into our lakes and rivers. If you spread lawn fertilizer into the street (pause) or you're not careful with leaves and yard waste (pause) they wash into storm drains too. If your car drips oil or antifreeze on the ground (pause) it washes into storm drains. And when you don't pick up after your pet – well, you get the picture. On October thirteenth, Girl Scouts take action. To learn how you can help, go to Girl Scouts R-V-dot-org."

Distribution of "Fowl Water" and "Plop" DVDs

Copies of the "Plop" and "Fowl Water" DVDs were distributed to 2 municipalities. The DVDs were made available to be played on community cable television stations, on television monitors in public buildings, and at educational events.

Online Stormwater Pollution Prevention Education at www.cleanwatermn.org

Website address: www.cleanwatermn.org

In 2012, the Clean Water Minnesota Media Campaign continued to maintain www.cleanwatermn.org.

Resources on the site include:

- Minnesota MS4 Toolkit: the Minnesota MS4 Toolkit was developed in partnership with the Minnesota Pollution Control Agency and the Washington Conservation District. Launched in spring 2009, the toolkit serves as a one-stop-shop for municipal stormwater pollution prevention education materials.

- Document Upload Tool: launched in fall 2009, the document upload tool allows MS4 educations and other stormwater pollution prevention experts to upload documents, brochures, posters, images and other resources directly into the MS4 Toolkit for others to use. This allows all of Minnesota's stormwater pollution prevention education community to share successful education materials with their peers.

- Image Gallery: For our new image gallery, we have created high quality, seasonally appropriate images of water friendly behaviors for use in water education materials. We have also begun to populate the gallery with images donated by partners and friends. Our hope is to create a stellar resource of free downloadable images for use in print and web resources that focus on water education. If you own the copyright to an image you would like to share, please contact us and/or use the document upload tool.

2012 Financial Report

In response to our fund-raising letters, members contributed $20,250 to the WaterShed Partners to support our meetings, state fair outreach, administration, exhibit maintenance, development and checkout. Supporting members of the Clean Water Minnesota Media Campaign gave $54,450 to support media outreach in the metro area.

Supporting Members of the Metro Watershed Partners and the Clean Water Minnesota Media Campaign

City of Andover
Bassett Creek Watershed Management Commission
City of Buffalo
Capitol Region Watershed District
Carver County
City of Columbia Heights
City of Crystal
City of Eden Prairie
Elm Creek Watershed Management Commission
City of Excelsior
City of Hilltop
City of Lauderdale
Lower Minnesota River Watershed District
Lower Mississippi RiverWatershed Management Organization
City of Minneapolis
Minnehaha Creek Watershed District
City of Minnetonka
Mississippi National River and Recreation Area, National Park Service
City of New Brighton
Pioneer-Sarah Creek Watershed Management Commission
City of Plymouth
City of Prior Lake
Ramsey Washington Metro Watershed District
Rice Creek Watershed District
City of Rochester
Scott County Clean Water Education Program
Shingle Creek Watershed Management Organization
City of Shoreview
South Washington Watershed District
City of St. Louis Park
City of St. Paul
West Mississippi Watershed Management Commission
City of Woodbury

2012 WaterShed Partners Financial Report

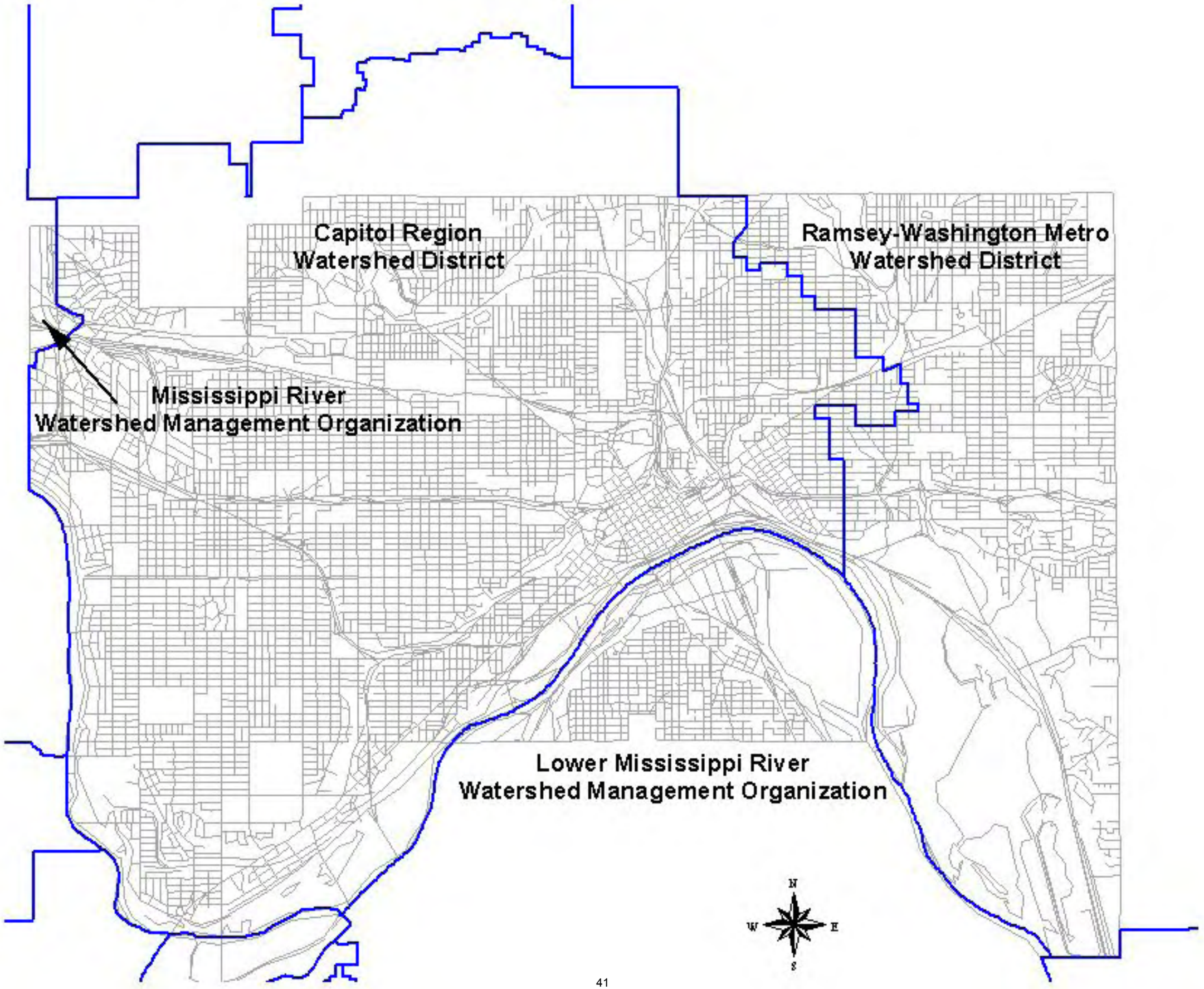
REVENUE	Inkind	Cash	Total
Purchased Media Funds Rollover		$10,214.00	
1. WaterShed Partners coordination	$32,178.16	$20,250.00	$52,428.16
2. Watershed Partner Exhibit	$20,700.00		$20,700.00
3. Media Campaign	$14,000.00	$54,450.00	$68,450.00
Total Revenue	**$66,878.16**	**$84,914.00**	**$151,792.16**

EXPENSE			
1. WaterShed Partner Coordination/Administration	**Partner Cash/ In-kind**	**Cash /Expenditure**	**Total**
Principle Investigator	$3,500.00	$1,500.00	$5,000.00
Program Coordinator	$5,000.00	$12,000.00	$17,000.00
Steering Committee	$16,000.00		$16,000.00
Web site maintenance/list serve	$2,400.00		$2,400.00
Boat Trip and Roundtable Expenses		$1,120.82	$1,120.82
Materials/supplies/operating expenses	$2,400.00	$423.07	$2,823.07
Accounting/indirect fees	$2,878.16		$2,878.16
Subtotal	**$32,178.16**	**$15,043.89**	**$47,222.05**
2. WaterShed Exhibit Implementation			
WaterShed Exhibit Coordination		$4,800.00	$4,800.00
Staffing of events (Including State Fair)	$15,000.00	$162.00	$15,162.00
WaterShed Exhibit transportation	$4,000.00		$4,000.00
Watershed Exhibit Development	$1,200.00		$1,200.00
Exhibit Maintenance	$500.00	$933.78	$1,433.78
Storage/checkout	$2,800.00	$1,200.00	$4,000.00
Subtotal	**$23,500.00**	**$7,095.78**	**$30,595.78**
3. Clean Water MN Media Campaign			
Purchased Media		$25,014.85	$25,014.85
Printing & Postage		$102.49	$102.49
Video Duplication		$54.99	$54.99
Meeting Expenses		$100.38	$100.38
Campaign Coordination web site management		$10,500.00	$10,500.00
Clean Water MN campaign research & development	$10,000.00	$20,000.00	$30,000.00
Fiscal Agency Fee, Hamline University	$4,000.00	$4,000.00	$8,000.00
Subtotal	**$14,000.00**	**$59,772.71**	**$73,772.71**

TOTAL 2012 Expenditures	**$69,678.16**	**$81,912.38**	**$151,590.54**

2012 Overview	
2012 Revenue and beginning 2012 balance	**$84,914.00**
2012 expense	$81,912.38
2012 ending balance	$3,001.62

Watershed Organizations in Saint Paul



MONITORING ACTIVITIES IN THE CITY OF SAINT PAUL

2011-2013

SAINT PAUL
The Most Livable City in America

CAPITOL REGION WATERSHED DISTRICT

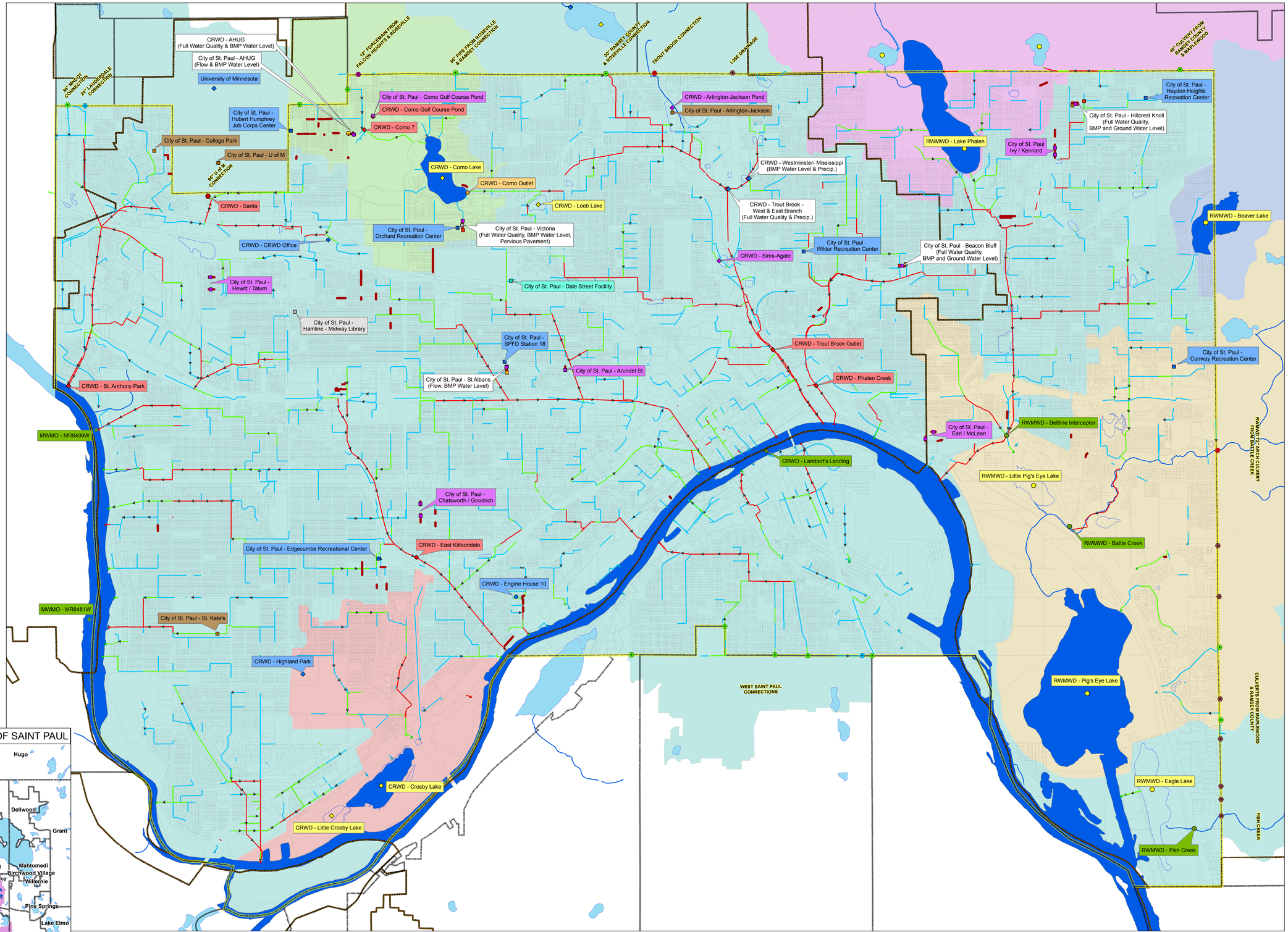
Ramsey-Washington Metro Watershed District

LOWER MISSISSIPPI
INVER GROVE HEIGHTS
LILYDALE
MENDOTA HEIGHTS
ST. PAUL
SOUTH ST. PAUL
SUNFISH LAKE
WEST ST. PAUL

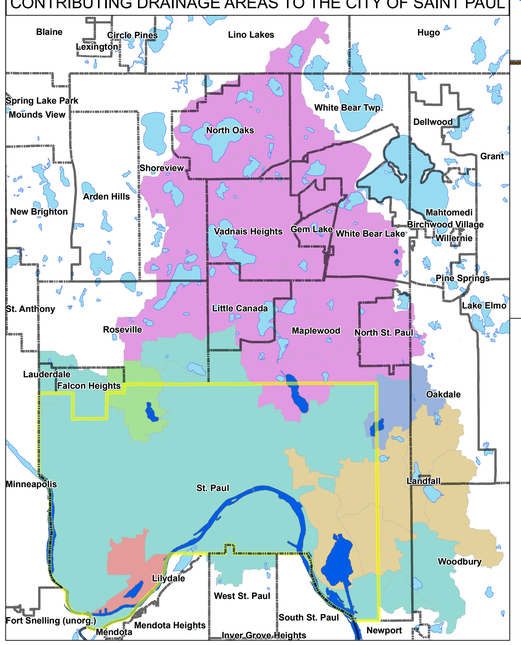
MWMO
Protect it. Pass it on.
MISSISSIPPI WATERSHED MANAGEMENT ORGANIZATION

N
W E
S

0 0.125 0.25 0.5 0.75 1 Miles



CONTRIBUTING DRAINAGE AREAS TO THE CITY OF SAINT PAUL



Notes: Labels are color coded to match the type of monitoring occurring at that location. Sites with multiple monitoring parameters are white with monitoring parameters annotated.

Information Sources:
2011 Monitoring Reports for:
-CRWD
-MWMO
-LMRWMO

2013 Water Quality and Quantity Monitoring Propsal
-City of Saint Paul

Website
-RWMWD

LEGEND

Monitoring Locations
Organization Conducting Monitoring
- City of Saint Paul
- CRWD
- RWMWD
- MWMO
- LMRWMO

Monitoring Site Type
(Monitoring Location Symbol Fill Color)
- Flow
- Full Water Quality Station*
- Lake Monitoring
- BMP Water Level
- River/Stream Monitoring
- Precipitation
- Ground Water Level
- Water Quality
- Pervious Pavement

* Full Water Quality Station Monitoring Includes Flow & Water Quality

Inter-City Connections
- Culverts, Roadways, and Others
- Force Main
- 24" Storm Sewer
- 30 - 48" Storm Sewer
- > 72" Storm Sewer and Channels

Outfalls
Diameter (inches)
- 30 - 48
- 50 - 72
- > 72

Storm Sewer
Diameter (inches)
- 30 - 48
- 50 - 72
- > 72

InfiltrationBMPs

City Boundary
- Other Cities
- St. Paul

Watershed Districts Boundary
- Watershed Districts Boundary

Streams

Major Water Bodies in Saint Paul

Water Bodies in Contributing Drainage Areas

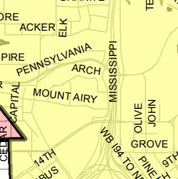
Parcel Lines

Major Subwatersheds
- Beaver Lake
- Como Lake
- Crosby Lake
- Lake Phalen
- Mississippi River
- Pigs Eye

WSB & Associates, Inc.

Saint Paul Sewers

CITYWIDE MODELING MAP



DATA UPDATED IN 6/2013

Legend

- Intersection Scale Model
- Mixed Scale Model
- Shaft Scale Model

WSB & Associates, Inc.
engineering • planning • environmental • construction

477 Temperance Street
St. Paul, MN 55101
Tel: 651-286-8450
Fax: 651-286-8488

Memorandum

To: ***Anne Weber, City of St. Paul***

From: ***Jesse Carlson***

Date: ***June 26, 2013***

Re: ***Estimates of Annual and Seasonal Pollutant Loads***
WSB Project No. 01610-100

The City of St. Paul is a Phase I MS4 permittee and is required to evaluate their annual and seasonal pollutant loads.

2012 Pollutant Loading Calculations

Pollutant loadings in pounds were calculated for each watershed using the following formula:

$$L = [P (Pj) (Rv) / 12] (C) (A)(2.72)$$

P = rainfall depth in inches over the desired time period
Pj = correction factor for storms that produce no runoff
Rv = runoff coefficient, which is the fraction of rainfall which is converted to runoff
C = event mean concentration of the pollutant (mg/l)
A = area of the watershed in acres

Values used in loading calculations:
P = 27.63 inches annual rainfall and Table 3
Pj = 0.85
Rv and A = Table 1
C = Table 2

Event mean concentrations were taken from the Capitol Region Watershed District's (CRWD) 2011 annual monitoring report. Data from the 2012 annual monitoring report was not available at the time this assessment was completed. The mean values of the event mean concentration were used to calculate the loads for this assessment.

Table 1. Watershed Inventory

Watershed	WS #	Area (acres)	Runoff Coefficient
Battle Creek	12	1089	0.54
Beaver Lake	1	278	0.33
Belt Line	2	2882	0.55
Crosby	21	1446	0.45
Davern	22	1277	0.55
Downtown	13	669	0.75
East Kittsondale	14	1870	0.62
Goodrich/ Western	16	424	0.63
Griffith/ Pt. Douglas	9	458	0.61
Hidden Falls	23	237	0.55
Highwood	19	1139	0.50
Lake Como	5	1240	0.47
Lake Phalen	3	995	0.42
Mississippi River Blvd.	15	2373	0.58
Phalen Creek	7	1406	0.62
Pigs Eye	17	2995	0.40
Riverview	18	2658	0.57
St. Anthony Hill	8	2542	0.64
St. Anthony Park	6	2467	0.68
Trout Brook	4	3959	0.62
Urban	11	339	0.57
West Kittsondale	10	847	0.67
West Seventh	20	450	0.60

Table 2. Average Event Mean Concentrations

Parameters	Units	Mean	Median
TP	mg/l	36.78	17
Ortho-P	mg/l	0.028	0.028
TKN	mg/l	1.06	1
NO3NO2	mg/l	0.74	0.56
NH3	mg/l	0.23	0.18
Cl	mg/l	124.22	92
cBOD	mg/l	3.64	1.8
TSS	mg/l	36.78	17
TDS	mg/l	437	400
Cd	µg/l	0.2	0.2
Cu	µg/l	6.08	6.3
Pb	µg/l	4.04	3
Zn	µg/l	27.4	22.1

The seasonal precipitation values from 2012 are provided in the table below. December was not included in the calculations as it fell in the form of snowfall and did not result runoff.

Table 3. Seasonal Precipitation

Season	Inclusive Dates	Precipitation for Period
Winter/Snowmelt	01/01/13-03/31/13	3.56
Spring	04/01/13-05/31/13	11.79
Summer	06/01/13-08/31/31	9.69
Fall	09/01/13-11/13/13	2.59

Table 4. Annual Pollutant Loadings (pounds)

Pollutant	Beaver Lake 1	Belt Line 2	Lake Phalen 3	Trout Brook 4	Lake Como 5	St. Anthony Park 6	Phalen Creek 7	St. Anthony Hill 8	Griffith/ Pt. Douglas 9	West Kittsondale 10	Urban 11	Battle Creek 12	Downtown 13	East Kittsondale 14	Mississippi River Blvd. 15	Goodrich/ Western 16	Pigs Eye 17	Riverview 18	Highwood 19	West Seventh 20	Crosby 21	Davern 22	Hidden Falls 23	Mississippi River Total
TP	70	1,212	320	1,877	446	1,283	667	1,244	214	434	148	450	384	887	1,053	204	916	1,159	436	206	498	537	100	14,743
TDP	14	239	63	370	88	253	131	245	42	86	29	89	76	175	208	40	181	229	86	41	98	106	20	2,908
TKN	515	8,907	2,348	13,793	3,275	9,426	4,898	9,142	1,570	3,189	1,086	3,304	2,819	6,515	7,734	1,501	6,732	8,513	3,200	1,517	3,656	3,947	732	108,320
NO3NO2	361	6,244	1,646	9,669	2,296	6,608	3,434	6,409	1,101	2,236	761	2,317	1,977	4,567	5,422	1,052	4,719	5,968	2,243	1,064	2,563	2,767	513	75,938
NH3	111	1,913	504	2,962	703	2,024	1,052	1,963	337	685	233	710	605	1,399	1,661	322	1,446	1,828	687	326	785	847	157	23,260
CL	60,666	1,048,198	276,350	1,623,170	385,395	1,109,340	576,453	1,075,827	184,749	375,271	127,780	388,874	331,798	766,690	910,149	176,642	792,216	1,001,882	376,600	178,546	430,296	464,451	86,198	12,747,542
cBOD	1,776	30,694	8,092	47,530	11,285	32,484	16,880	31,503	5,410	10,989	3,742	11,387	9,716	22,450	26,651	5,172	23,198	29,337	11,028	5,228	12,600	13,600	2,524	373,276
TSS	17,961	310,334	81,817	480,563	114,102	328,436	170,667	318,514	54,698	111,104	37,831	115,132	98,234	226,990	269,463	52,297	234,547	296,622	111,498	52,861	127,395	137,508	25,520	3,774,093
TDS	213,416	3,687,445	972,168	5,710,131	1,355,778	3,902,536	2,027,897	3,784,639	649,926	1,320,162	449,514	1,368,014	1,167,230	2,697,132	3,201,803	621,406	2,786,928	3,524,510	1,324,838	628,106	1,513,735	1,633,889	303,235	44,844,437
Cd	0	2	0	3	1	2	1	2	0	1	0	1	1	1	1	0	1	2	1	0	1	1	0	21
Cu	3	51	14	79	19	54	28	53	9	18	6	19	16	38	45	9	39	49	18	9	21	23	4	624
Pb	2	34	9	53	13	36	19	35	6	12	4	13	11	25	30	6	26	33	12	6	14	15	3	415
Zn	13	231	61	358	85	245	127	237	41	83	28	86	73	169	201	39	175	221	83	39	95	103	19	2,814

Table 5. Seasonal Pollutant Loadings **Winter/Snowmelt (January - March)**

Pollutant	Beaver Lake	Belt Line	Lake Phalen	Trout Brook	Lake Como	St. Anthony Park	Phalen Creek	St. Anthony Hill	Griffith/ Pt. Douglas	West Kittsondale	Urban	Battle Creek	Downtown	East Kittsondale	Mississippi River Blvd.	Goodrich/ Western	Pigs Eye	Riverview	Highwood	West Seventh	Crosby	Davern	Hidden Falls	Mississippi River
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Total
TP	9	156	41	242	57	165	86	160	28	56	19	58	49	114	136	26	118	149	56	27	64	69	13	1,900
TDP	2	31	8	48	11	33	17	32	5	11	4	11	10	23	27	5	23	29	11	5	13	14	3	375
TKN	66	1,148	303	1,777	422	1,215	631	1,178	202	411	140	426	363	839	996	193	867	1,097	412	195	471	509	94	13,957
NO3NO2	47	805	212	1,246	296	851	442	826	142	288	98	298	255	588	699	136	608	769	289	137	330	356	66	9,784
NH3	14	246	65	382	91	261	136	253	43	88	30	91	78	180	214	42	186	236	89	42	101	109	20	2,997
CL	7,817	135,056	35,606	209,138	49,656	142,933	74,273	138,615	23,804	48,352	16,464	50,105	42,751	98,785	117,269	22,759	102,073	129,088	48,523	23,005	55,442	59,842	11,106	1,642,463
cBOD	229	3,955	1,043	6,124	1,454	4,185	2,175	4,059	697	1,416	482	1,467	1,252	2,893	3,434	666	2,989	3,780	1,421	674	1,623	1,752	325	48,095
TSS	2,314	39,985	10,542	61,918	14,701	42,318	21,990	41,039	7,048	14,315	4,874	14,834	12,657	29,247	34,719	6,738	30,220	38,218	14,366	6,811	16,414	17,717	3,288	486,275
TDS	27,498	475,111	125,259	735,724	174,686	502,824	261,285	487,634	83,740	170,097	57,918	176,262	150,392	347,513	412,538	80,065	359,083	454,117	170,699	80,929	195,038	210,519	39,071	5,778,002
Cd	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Cu	0	7	2	10	2	7	4	7	1	2	1	2	2	5	6	1	5	6	2	1	3	3	1	80
Pb	0	4	1	7	2	5	2	5	1	2	1	2	1	3	4	1	3	4	2	1	2	2	0	53
Zn	2	30	8	46	11	32	16	31	5	11	4	11	9	22	26	5	23	28	11	5	12	13	2	363

Table 6. Seasonal Pollutant Loadings **Spring (April - May)**

Pollutant	Beaver Lake	Belt Line	Lake Phalen	Trout Brook	Lake Como	St. Anthony Park	Phalen Creek	St. Anthony Hill	Griffith/ Pt. Douglas	West Kittsondale	Urban	Battle Creek	Downtown	East Kittsondale	Mississippi River Blvd.	Goodrich/ Western	Pigs Eye	Riverview	Highwood	West Seventh	Crosby	Davern	Hidden Falls	Mississippi River
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Total
TP	30	517	136	801	190	547	284	531	91	185	63	192	164	378	449	87	391	494	186	88	212	229	43	6,291
TDP	6	102	27	158	38	108	56	105	18	37	12	38	32	75	89	17	77	98	37	17	42	45	8	1,241
TKN	220	3,801	1,002	5,885	1,397	4,022	2,090	3,901	670	1,361	463	1,410	1,203	2,780	3,300	640	2,872	3,633	1,366	647	1,560	1,684	313	46,221
NO3NO2	154	2,664	702	4,126	980	2,820	1,465	2,735	470	954	325	988	843	1,949	2,314	449	2,014	2,547	957	454	1,094	1,181	219	32,403
NH3	47	816	215	1,264	300	864	449	838	144	292	99	303	258	597	709	138	617	780	293	139	335	362	67	9,925
CL	25,887	447,277	117,921	692,623	164,452	473,367	245,978	459,066	78,834	160,132	54,525	165,936	141,582	327,155	388,370	75,375	338,047	427,513	160,699	76,187	183,612	198,186	36,782	5,439,505
cBOD	758	13,097	3,453	20,282	4,816	13,861	7,203	13,442	2,308	4,689	1,597	4,859	4,146	9,580	11,372	2,207	9,899	12,519	4,706	2,231	5,377	5,803	1,077	159,281
TSS	7,664	132,423	34,912	205,061	48,688	140,147	72,825	135,913	23,340	47,409	16,143	49,128	41,917	96,859	114,982	22,316	100,084	126,571	47,577	22,556	54,361	58,676	10,890	1,610,444
TDS	91,067	1,573,470	414,834	2,436,571	578,524	1,665,252	865,324	1,614,944	277,330	563,326	191,812	583,745	498,069	1,150,893	1,366,242	265,160	1,189,210	1,503,944	565,322	268,019	645,926	697,197	129,394	19,135,574
Cd	0	1	0	1	0	1	0	1	0	0	0	0	0	1	1	0	1	1	0	0	0	0	0	9
Cu	1	22	6	34	8	23	12	22	4	8	3	8	7	16	19	4	17	21	8	4	9	10	2	266
Pb	1	15	4	23	5	15	8	15	3	5	2	5	5	11	13	2	11	14	5	2	6	6	1	177
Zn	6	99	26	153	36	104	54	101	17	35	12	37	31	72	86	17	75	94	35	17	41	44	8	1,201

Table 7. Seasonal Pollutant Loadings **Summer (June - August)**

Pollutant	Beaver Lake	Belt Line	Lake Phalen	Trout Brook	Lake Como	St. Anthony Park	Phalen Creek	St. Anthony Hill	Griffith/ Pt. Douglas	West Kittsondale	Urban	Battle Creek	Downtown	East Kittsondale	Mississippi River Blvd.	Goodrich/ Western	Pigs Eye	Riverview	Highwood	West Seventh	Crosby	Davern	Hidden Falls	Mississippi River
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Total
TP	25	425	112	658	156	450	234	436	75	152	52	158	135	311	369	72	321	406	153	72	175	188	35	5,170
TDP	5	84	22	130	31	89	46	86	15	30	10	31	27	61	73	14	63	80	30	14	34	37	7	1,020
TKN	181	3,124	824	4,837	1,149	3,306	1,718	3,206	551	1,118	381	1,159	989	2,285	2,712	526	2,361	2,986	1,122	532	1,282	1,384	257	37,988
NO3NO2	127	2,190	577	3,391	805	2,318	1,204	2,248	386	784	267	812	693	1,602	1,901	369	1,655	2,093	787	373	899	970	180	26,632
NH3	39	671	177	1,039	247	710	369	688	118	240	82	249	212	491	582	113	507	641	241	114	275	297	55	8,158
CL	21,276	367,609	96,917	569,255	135,160	389,052	202,165	377,299	64,793	131,610	44,813	136,380	116,364	268,883	319,194	61,949	277,835	351,366	132,076	62,617	150,907	162,886	30,230	4,470,636
cBOD	623	10,764	2,838	16,669	3,958	11,392	5,920	11,048	1,897	3,854	1,312	3,994	3,407	7,873	9,347	1,814	8,136	10,289	3,867	1,834	4,419	4,770	885	130,910
TSS	6,299	108,836	28,694	168,536	40,016	115,184	59,854	111,705	19,183	38,965	13,268	40,377	34,451	79,607	94,502	18,341	82,257	104,027	39,103	18,539	44,678	48,225	8,950	1,323,596
TDS	74,846	1,293,208	340,945	2,002,576	475,479	1,368,642	711,195	1,327,295	227,933	462,988	157,647	479,770	409,354	945,900	1,122,891	217,931	977,392	1,236,066	464,628	220,280	530,875	573,014	106,346	15,727,202
Cd	0	1	0	1	0	1	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	7
Cu	1	18	5	28	7	19	10	18	3	6	2	7	6	13	16	3	14	17	6	3	7	8	1	219
Pb	1	12	3	19	4	13	7	12	2	4	1	4	4	9	10	2	9	11	4	2	5	5	1	146
Zn	5	81	21	126	30	86	45	83	14	29	10	30	26	59	70	14	61	78	29	14	33	36	7	987

Table 8. Seasonal Pollutant Loadings **Fall (September - November)**

Pollutant	Beaver Lake	Belt Line	Lake Phalen	Trout Brook	Lake Como	St. Anthony Park	Phalen Creek	St. Anthony Hill	Griffith/ Pt. Douglas	West Kittsondale	Urban	Battle Creek	Downtown	East Kittsondale	Mississippi River Blvd.	Goodrich/ Western	Pigs Eye	Riverview	Highwood	West Seventh	Crosby	Davern	Hidden Falls	Mississippi River
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Total
TP	7	114	30	176	42	120	62	117	20	41	14	42	36	83	99	19	86	109	41	19	47	50	9	1,382
TDP	1	22	6	35	8	24	12	23	4	8	3	8	7	16	19	4	17	21	8	4	9	10	2	273
TKN	48	835	220	1,293	307	884	459	857	147	299	102	310	264	611	725	141	631	798	300	142	343	370	69	10,154
NO3NO2	34	585	154	906	215	619	322	601	103	210	71	217	185	428	508	99	442	559	210	100	240	259	48	7,118
NH3	10	179	47	278	66	190	99	184	32	64	22	67	57	131	156	30	136	171	64	31	74	79	15	2,180
CL	5,687	98,257	25,905	152,154	36,126	103,988	54,036	100,847	17,318	35,177	11,978	36,452	31,102	71,869	85,316	16,558	74,261	93,915	35,302	16,737	40,335	43,537	8,080	1,194,938
cBOD	167	2,877	759	4,455	1,058	3,045	1,582	2,953	507	1,030	351	1,067	911	2,104	2,498	485	2,175	2,750	1,034	490	1,181	1,275	237	34,990
TSS	1,684	29,090	7,669	45,047	10,696	30,787	15,998	29,857	5,127	10,415	3,546	10,792	9,208	21,278	25,259	4,902	21,986	27,805	10,452	4,955	11,942	12,890	2,392	353,779
TDS	20,005	345,656	91,130	535,260	127,089	365,819	190,092	354,767	60,923	123,750	42,137	128,236	109,415	252,826	300,133	58,250	261,243	330,383	124,189	58,878	141,895	153,159	28,425	4,203,659
Cd	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Cu	0	5	1	7	2	5	3	5	1	2	1	2	2	4	4	1	4	5	2	1	2	2	0	58
Pb	0	3	1	5	1	3	2	3	1	1	0	1	1	2	3	1	2	3	1	1	1	1	0	39
Zn	1	22	6	34	8	23	12	22	4	8	3	8	7	16	19	4	16	21	8	4	9	10	2	264

Outfall Inventory

Outfall	Location	Watershed	Pipe Size	Acres
	Bridal Veil Creek			
005	South of Buford	Bridal Veil	42"	
	Mississippi River			
010	Eustis	St. Anthony Park	tunnel	2467
020	Lotus	Miss. River Blvd.	tunnel	31
030	Marshall	Miss. River Blvd.	tunnel	121
040	West Kittsondale	West Kittsondale	tunnel	977
050	Otis	Miss. River Blvd.	tunnel	14
060	Portland Ave	Miss. River Blvd.	tunnel	508
070	Summit	Miss. River Blvd.	16" cast iron	30
080	Goodrich	Miss. River Blvd.	tunnel	456
090	Princeton	Miss. River Blvd.	tunnel	150
095	Berkeley	Miss. River Blvd.	24"	
100	Jefferson	Miss. River Blvd.	tunnel	139
110	Randolph	Miss. River Blvd.	tunnel	39
115	Hartford	Miss. River Blvd.	tunnel	580
120	Scheffer	Miss. River Blvd.	tunnel	8
130	Highland Parkway	Miss. River Blvd.	tunnel	165
135	Hidden Falls	Hidden Falls	48"	269
140	Sheridan	Davern	tunnel	145
145	West 7th	Davern	30"	30
150	Davern	Davern	tunnel	963
151	Watergate Marina	Crosby	21"	

Outfall Inventory

Outfall	Location	Watershed	Pipe Size	Acres
156	Elway	Crosby	60"	
158	Elway	Crosby	90"	820
160	Otto	E. Kittsondale	tunnel	177
170	Bay	E. Kittsondale	tunnel	1699
180	Sumac	West 7th	tunnel	8
190	Drake	West 7th	tunnel	158
195	Fountain Cave	West 7th	42"	39
200	Richmond	West 7th	20"	142
201	Richmond	West 7th	42"	
206	Western	West 7th	30"	98
210	Smith -1992	Good/West	tunnel	424
220	Sherman	Downtown	48"	41
230	Chestnut	Downtown	27"	82
240	Eagle	Downtown	3'x5' brick	77
~~250~~	~~Ontario~~ abandoned	~~Downtown~~	~~24"~~	
260	Market	Downtown	24"	
270	St. Peter	St. Anthony Hill	tunnel	2653
280	Cedar	Downtown	tunnel	
290	Minnesota	Downtown	tunnel	115
295	Robert	Downtown	tunnel	5
300	Jackson	Downtown	36"	27
310	Sibley	Downtown	48"	10
~~315~~	~~Wacouta~~	~~Downtown~~	~~12"~~	~~10~~

Outfall Inventory

Outfall	Location	Watershed	Pipe Size	Acres
320	Broadway	Downtown	7'x8' concrete	115
325	Troutbrook	Troutbrook	dual 10'	4025
330	Plum	Phalen Creek	tunnel	1406
340	Urban	Urban	48" brick	328
343	Warner and Childs	Pig's Eye	24"	
346	Warner and Childs	Pig's Eye	18"	
350	Beltline (RWMWD's)	Beltline	9'	3524
~~352~~	~~off Child's Road~~	~~Pig's Eye~~	~~12"~~	
~~354~~	~~off Child's Road~~	~~Pig's Eye~~	~~12"~~	
~~356~~	~~off Child's Road~~	~~Pig's Eye~~	~~12"~~	
360	Battle Creek	Pig's Eye	36"	
365	Wyoming	Riverview	30" culvert	8
380	Page and Barge Ch Rd	Riverview	42"	69
385	Robie and Witham	Riverview	54"	
390	Robie and Kansas	Riverview	42"	264
400	Airport	Riverview	12"	
405	Chester St	Riverview	tunnel	326
407	Eva St	Riverview	36"	
410	Custer St	Riverview	tunnel	188
420	Moses St	Riverview	5'6"	95
430	Belle	Riverview	2-36"x40"	37
440	Riverview	Riverview	2-77"x121"	801
460	Chippewa and Baker	Riverview	16"	71

Outfall Inventory

Outfall	Location	Watershed	Pipe Size	Acres
	Upper Lake			
152	Springfield	Crosby	15"	
	Crosby Lake			
153	Rankin	Crosby	27"	
154	Homer	Crosby	30"	
155	Leland	Crosby	30"	
	Fairview North Pond			
500	Tatum & Pierce Butler	St. Anthony Park	6'	
510	Pierce Butler & Aldine	St. Anthony Park	54"	
	Lake Como			
520	Arlington & Chelsea	Como	60"	310
530	Chatsworth North	Como	36"	201
540	Milton North	Como	36"	79
550	Parkview East	Como	18"	17
560	Ivy East	Como	18"	24
570	Wheelock Pkwy East	Como	24"	23
580	Rose East	Como	36"	30
590	Victoria South	Como	30"	49
600	Chatsworth South	Como	24"	75
610	Horton West	Como	15"	311
620	Park West	Como	36"	50

Outfall Inventory

Outfall	Location	Watershed	Pipe Size	Acres
	Loeb Lake			
630	Jessamine	Troutbrook	36"	
	Lake Phalen			
680	Arlington West	Phalen	72"	380
690	Blomquist South	Phalen	36"	71
700	Arlington East	Phalen	42"	209
710	between Hoyt & Neb.	Phalen	42"	69
720	Larpenteur East	Phalen	84"	17
	Beaver Lake			
726	Lacrosse	Beaver	15"	
728	Ames	Beaver	15"	
730	Rose North	Beaver	42"	67
740	McKnight North	Beaver	21"	22
	Suburban Pond			
---	Suburban & VanDyke (RWMWD's)	Battle Creek	102"	
750	Suburban & WB Ave	Battle Creek	27"	
760	Suburban & Hazel	Battle Creek	54"	
	Little Pig's Eye Lake			
770	near fish hatchery	Griffith/Pt. Douglas	72"	
	Pig's Eye Lake			
780	Burlington	Highwood	66"	
784	Winthrop @ Lower Afton	Highwood	30"	

Outfall Inventory

Outfall	Location	Watershed	Pipe Size	Acres
786	Morningside @ Lower Afton	Highwood	18"	
790	Springside Drive	Highwood	33"	
791	Highwood	Highwood	48"	
	Battle Creek			
~~800~~	~~N. Park Drive & Faye~~	~~Battle Creek~~	~~33"~~	
808	Sandralee	Battle Creek	24"	
810	Ruth	Battle Creek	42"&73-1/2" arch	
812	Warren	Battle Creek	18"	
814	Cutler	Battle Creek	24"	
816	Nelson	Battle Creek	24"	
818	Winthrop & Larry Ho	Battle Creek	30"	
820	Winthrop & N. Park Dr	Battle Creek	36"	
825	Michael N	Battle Creek	33"	
826	Michael S	Battle Creek	30"	
830	McKnight & N. Park Dr	Battle Creek	36"	
836	A Street	Battle Creek	18"	

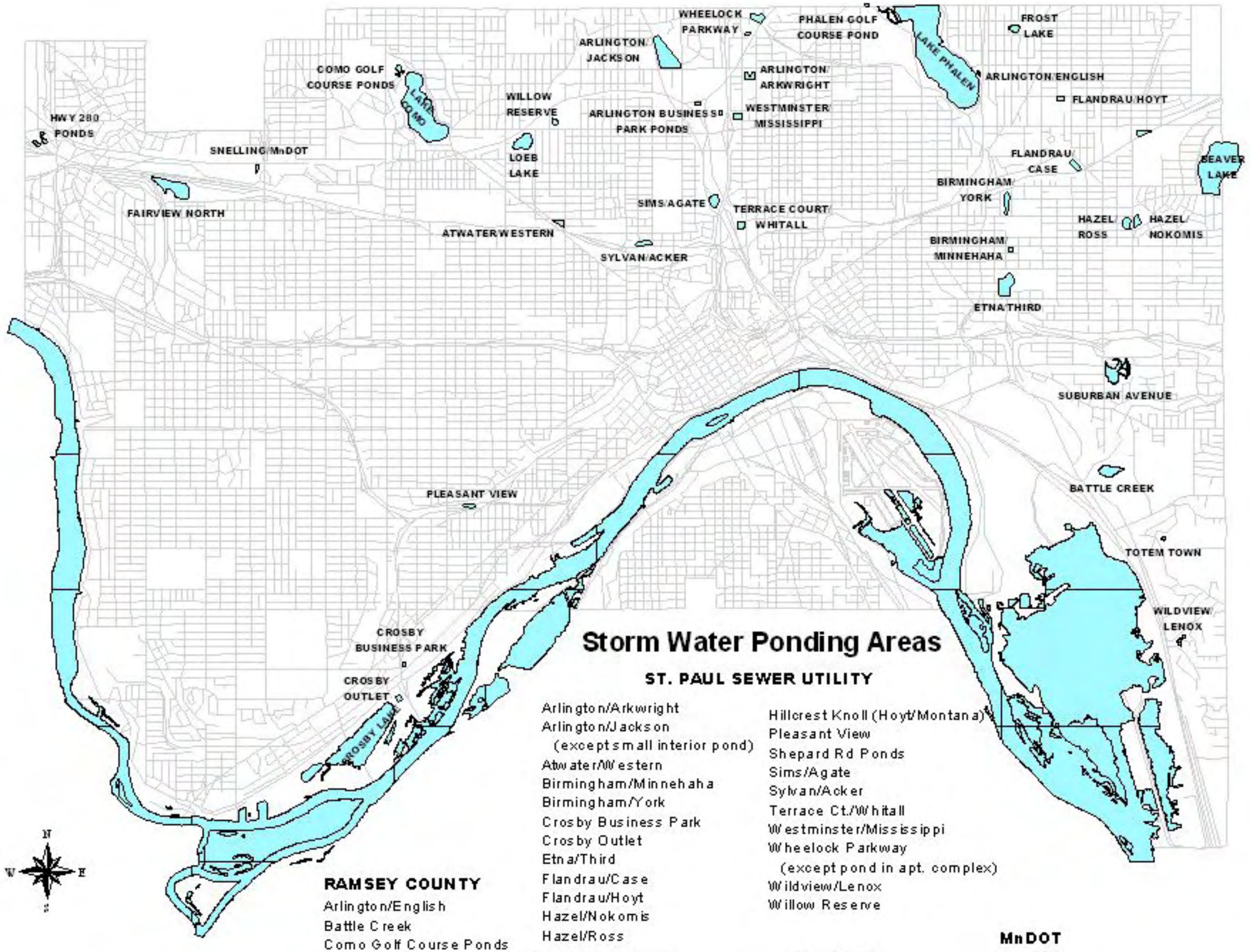
LAKE COMO
LAKE PHALEN
TROUT BROOK
BELT LINE
BEAVER LAKE
PHALEN CREEK
ST. ANTHONY PARK
WEST KITTSONDALE
ST. ANTHONY HILL
URBAN
BATTLE CREEK
GRIFFITH
PT. DOUGLAS
DOWNTOWN
GOODRICH
WESTERN
EAST KITTSONDALE
MISSISSIPPI RIVER BLVD
PIGS EYE
HIGHWOOD
WEST SEVENTH
RIVERVIEW
CROSBY
HIDDEN FALLS
DAVERN

City of Saint Paul

Watersheds

Watershed Inventory

Watershed	WS#	Area (acres)	Population (2000 Census)	Percent Impervious	Runoff Coefficient
Beaver Lake	1	278	2,070	31	0.33
Belt Line	2	2,882	30,994	56	0.55
Lake Phalen	3	995	7,626	41	0.42
Trout Brook	4	3,959	37,665	63	0.62
Lake Como	5	1,240	9,753	47	0.47
St. Anthony Park	6	2,467	13,140	70	0.68
Phalen Creek	7	1,406	18,418	64	0.62
St. Anthony Hill	8	2,542	36,410	66	0.64
Griffith/Pt. Douglas	9	458	5,264	63	0.61
W. Kittsondale	10	847	7,732	69	0.67
Urban	11	339	4,491	58	0.57
Battle Creek	12	1,089	8,201	54	0.54
Downtown	13	669	6,097	78	0.75
E. Kittsondale	14	1,870	18,353	64	0.62
Mississippi River Blvd.	15	2,373	27,251	59	0.58
Goodrich/Western	16	424	5,010	64	0.63
Pigs Eye	17	2,995	913	39	0.40
Riverview	18	2,658	14,860	58	0.57
Highwood	19	1,139	5,216	50	0.50
W. Seventh	20	450	2,543	61	0.60
Crosby	21	1,446	8,804	45	0.45
Davern	22	1,277	6,628	56	0.55
Hidden Falls	23	237	1,263	56	0.55
Total		34,040	278,706		



Storm Water Ponding Areas

ST. PAUL SEWER UTILITY

Arlington/Arkwright
Arlington/Jackson
(except small interior pond)
Atwater/Western
Birmingham/Minnehaha
Birmingham/York
Crosby Business Park
Crosby Outlet
Etna/Third
Flandrau/Case
Flandrau/Hoyt
Hazel/Nokomis
Hazel/Ross
Hillcrest Knoll (Hoyt/Montana)
Pleasant View
Shepard Rd Ponds
Sims/Agate
Sylvan/Acker
Terrace Ct./Whitall
Westminster/Mississippi
Wheelock Parkway
(except pond in apt. complex)
Wildview/Lenox
Willow Reserve

RAMSEY COUNTY

Arlington/English
Battle Creek
Como Golf Course Ponds
Surburban Avenue
Totem Town

ST. PAUL PARKS

Phalen Golf Course Pond

RAILROAD

Fairview/North

MnDOT

Hwy. 280
Snelling/MnDOT

City of Saint Paul

Storm Water Ponding Area Inventory

Ponding Area	Drainage Area (acres)	Population 2000 Census	Pond Area (acres)	Storage Capacity (Acre-feet
Arlington/Arkwright	302.3	4001	5	20.4
Arlington/Jackson	699.4	6562	14.5	75.6
Atwater/Western	127.3	1230	2.7	13.3
Birmingham/Minnehaha	41.0	457	0.9	2.5
Birmingham/York	146.5	2050	2.2	9.5
Crosby Business Park	39.6	198	1	5.52
Crosby Outlet	866.0	6295	5.5	40.6
Etna/Third	244.0	2457	4.7	25.1
Flandrau/Case	95.2	1331	0.7	3
Flandrau/Hoyt	479.5	4582	1.9	20.8
Hazel/Nokomis	73.0	511	2.3	6.3
Hazel/Ross	67.8	949	4	3.8
Pleasant View	164.5	2053	2.3	14.5
Sims/Agate	174.6	1357	5.3	12.8
Sylvan/Acker	376.9	3617	2.1	11.7
Terrace Ct./Whitall	4.7	28	0.5	0.5
Westminister/Mississippi	123.4	1912	2.2	10.1
Wheelock Parkway	19.0	265	1.3	1.7
Wildview/Lenox	19.3	111	0.73	2.2
Willow Reserve	372.1	3669	20.3	42.6
Total	4436.2	43633.6		

Drainage area only includes area in St. Paul.

Storage capacity is for a 100 year storm in acre-feet.

Storm Water Ponding Areas by Watershed Area

Beaver Lake	None
Belt Line	Birmingham/Minnehaha Birmingham/York Etna/Third Flandrau/Hoyt Flandrau/Case Hazel/Nokomis Hazel/Ross Hillcrest Knoll (Hoyt/Montana)
Lake Phalen	Arlington/English Phalen Golf Course Pond
Trout Brook	Arlington/Jackson Arlington/Arkwright Atwater/Western Sims/Agate Sylvan/Acker Terrace Ct./Whitall Westminster/Mississippi Wheelock Parkway Willow Reserve
Lake Como	Como Golf Course Ponds
St. Anthony Park	Fairvew/North Highway 280 Snelling/MnDOT
Phalen Creek	None
St. Anthony Hill	None
Griffith/ Pt. Douglas	None
W. Kittsondale	None
Urban	None
Battle Creek	Battle Creek Surburban Avenue
Downtown	None

E. Kittsondale	Pleasant View
Mississippi River Blvd.	None
Goodrich/ Western	None
Pigs Eye	None
Riverview	None
Highwood	Totem Town Wildview/Lenox
W. Seventh	None
Crosby	Crosby Business Park Crosby Outlet
Davern	None
Hidden Falls	None

NPDES/SDS PERMITTED FACILITIES IN ST PAUL (Non-storm water discharges)

Permit #	Permittee	Facility Address	Waterbody	Use	Type of Discharge
MN0062669	Archdiocese of St. Paul/Minneapolis	226 Summit Ave. St. Paul, MN 55102	Miss R	Religious Organization	Industrial
MN0053988	Ashland Chemical Inc.	395 James Ave. St. Paul, MN 55102	Miss R	Mixed, Manufac. Liq. Gas Prod.	Industrial
MN0058246	Buckbee Mears	245 E. 6th St. St. Paul, MN 55101	Miss R	Plating and Polishing	Industrial
MN0059765	Captain Ken's Foods Inc.	344 S. Robert St. St. Paul, MN 55107	Miss R	Canned specialties	Industrial
MNG790065	Conoco Philips Petroleum Co	1817 Randolph Ave. St. Paul, MN 55105	Miss. R.	Gasoline Service Stations	Groundwater pumpout
MN0000612	Diamond Products Co.	310 E. 5th St. St. Paul, MN 55101	Miss R	Perfumes, cosmetics, toilet prep	Industrial
MN0064696	Flint Hill Resources	P.O. Box 64596 St. Paul, MN 55164	Miss. R		Industrial
MN0002178	Ford Motor Co.	966 S. Miss. River Blvd. St. Paul, MN 55116	Miss. R	Motor vehicles & car bodies	Industrial
MNG255013	Gross-Given Mfg. Co.	75 W. Plato Blvd. St. Paul, MN 55107	Miss R	Automatic merchandising machine	Noncontact cooling water
MNG250041	Mann Theatres Grandview	1830 Grand Ave. St. Paul, MN 55105	Miss R	Motion picture theater	Noncontact cooling water
MNG250040	Mann Theatres Highland	760 S. Cleveland St. Paul, MN 55116	Miss R	Motion picture theater	Noncontact cooling water

NPDES/SDS PERMITTED FACILITIES IN ST PAUL (Non-storm water discharges)

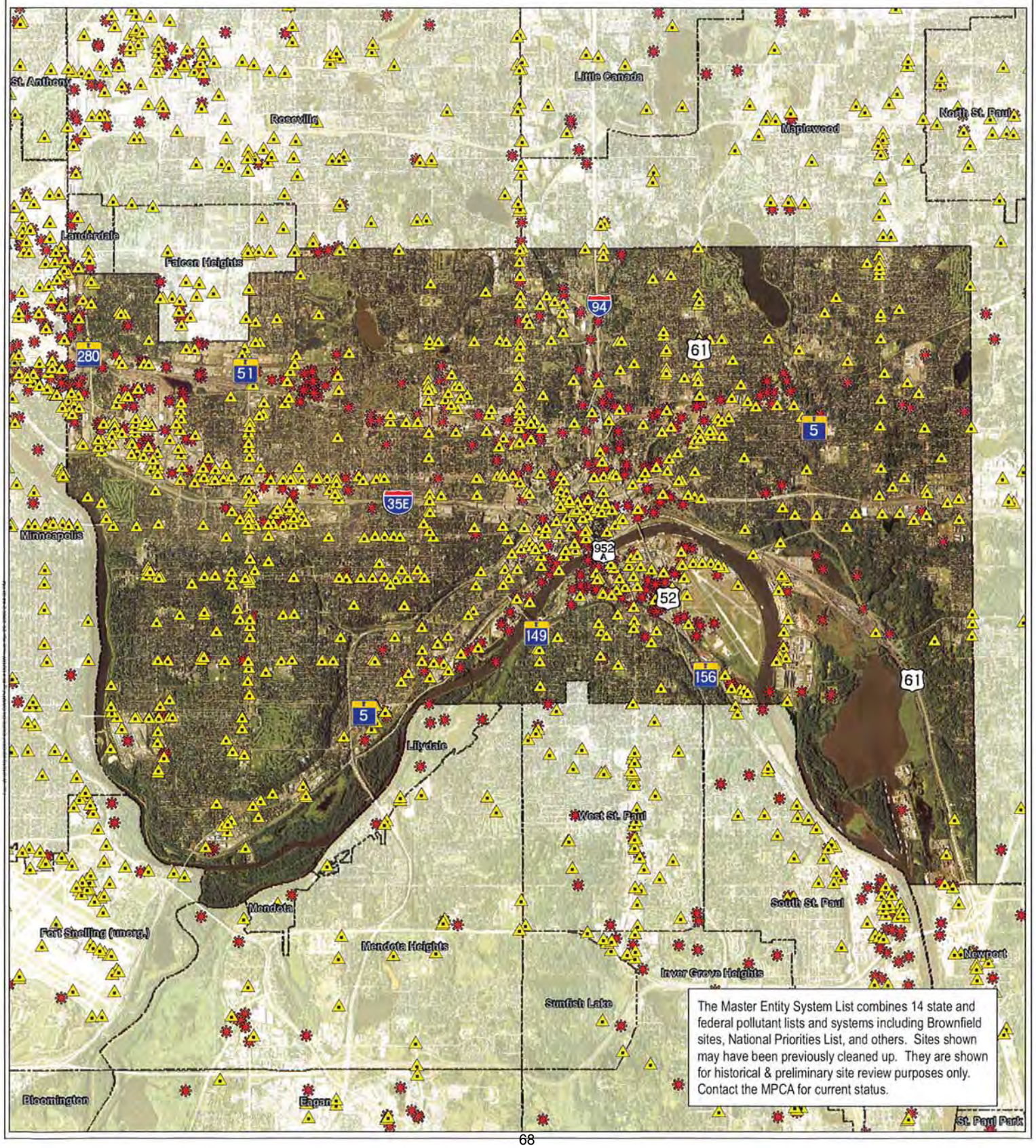
Permit #	Permittee	Facility Address	Waterbody	Use	Type of Discharge
MN0025470	Metro Council	230 E. 5th St. St. Paul, MN 55102	Miss R	H20, sew, pipe & com. & powr	Domestic
MNG790115	Metro Council Metro Transit	400 Snelling Ave. N. St. Paul, MN 55114	Miss R		Groundwater pumpout
MN0054640	Minnesota Brewing Co./ Gopher State	882 W. 7th St. St. Paul, MN 55102	Miss. R	Malt beverages	Industrial
MN0053571	NSP High Bridge	501 Shepard Rd. St. Paul, MN 55102	Miss. R	Heavy construction, nec.	Dredging
MN000084	NSP High Bridge Plant	501 Shepard Rd St. Paul, MN 55102	Miss. R	Electrical services	Industrial
MNG255066	Pearson Candy Co.	2140 W. 7th St. St. Paul, MN 55116	Miss R	Salted & roasted nuts & seeds	Noncontact cooling water
MNG990031	Peavey Red Rock Term.	1061 Red Rock Rd. St. Paul, MN 55119	Miss. R.		Dredging
MNG250100	St. Paul Pioneer Press	345 Cedar St. St. Paul, MN 55101	Miss R	Newspaper: publishing & print	Noncontact cooling water
MN0054577	St. Paul Pioneer Press	#1 Ridder Circle St. Paul, MN 55107	Miss R	Newspaper: publishing & print	Industrial
MN0054739	St. Paul Port Authority	1500 Energy Pk. Dr. St. Paul, MN 55108	Miss R	Steam & air conditioning sup	Industrial
MNG250072	St. Paul River Centre	143 W. 4th St. St. Paul, MN 55102	Miss R	Prof. Sports clubs and promoters	Noncontact cooling water

NPDES/SDS PERMITTED FACILITIES IN ST PAUL (Non-storm water discharges)

Permit #	Permittee	Facility Address	Waterbody	Use	Type of Discharge
MN0045829	St. Paul Water Utility	1900 N. Rice St. Roseville, MN 55113	Troutbrook	Water supply	Water Treatment
MN0002968	United Hospitals Inc.	333 N. Smith Ave. St. Paul, MN 55102	Miss R	Gen. medical/ surgical hospital	Industrial
MN0050580	USCOE River dredging Construction & Ops.	190 5th St. E. St. Paul, MN 55101	Miss. R	Heavy construction, nec.	River dredging
MN0066303	US Bank National Assoc.	60 Livingston St. S. St. Paul, MN 55107	Miss R		Industrial
MN0059277	Versa Companies	867 Forest St. St. Paul, MN 55106	Miss R	Gray iron foundries	Industrial
MN0048984	Waldorf Corp.	2250 Wabash Ave. St. Paul, MN 55114	Miss R	Corrugated/solid fiber boxes	Industrial
MN0062031	St. Paul Commercial- Galtier	175 E. 5th St. St. Paul, MN 55101	Miss R	Operators of apartment buildings	Industrial
MN0057606	Zeller-World Trade	30 E. 7th St. St. Paul, MN 55101	Miss R	Operators of nonresidential buildings	Industrial
MN0049816	3M St. Paul	Building 21-2W-05	Miss R	Surgical & medical instruments	Industrial
MNG255045	528 Partnership LLP	345 E. Plato Blvd. St. Paul, MN 55107	Miss. R	Commercial print, Lithographic	Noncontact cooling water

City of Saint Paul

Industrial Land Use


The City of Saint Paul
Pollutant Source Locations
Stormwater Modeling
Volume Reduction Inventory
2010 RSVP Stormwater Study
City of St. Paul, MN
Legend
Leaking Underground Storage Tank
Pollution Source Locations
N
W
E
S
0
7,500
15,000
Feet
WSB
St. Anthony
Roseville
Little Canada
Maplewood
North St. Paul
Lauderdale
Falcon Heights
Minneapolis
Lilydale
West St. Paul
South St. Paul
Mendota
Fort Snelling (unorg.)
Mendota Heights
Inver Grove Heights
Newport
Sunfish Lake
Eagan
Bloomington
St. Paul Park
94
280
51
35E
61
5
952
52
149
156
The Master Entity System List combines 14 state and federal pollutant lists and systems including Brownfield sites, National Priorities List, and others. Sites shown may have been previously cleaned up. They are shown for historical & preliminary site review purposes only. Contact the MPCA for current status.